



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

February 1, 2018

Richard Cantrell, Office Manager
Quail Valley Water District
24750 Sand Canyon Road
Tehachapi, CA 93561

CITATION NO. 03_19_18C_011
TOTAL COLIFORM MAXIMUM CONTAMINANT LEVEL VIOLATION
FOR September, October, November 2017, and January 2018 – QUAIL VALLEY WATER DISTRICT – WESTSIDE WATER SYSTEM, SYSTEM NO. 1503226

Dear Mr. Cantrell,

The State Water Resources Control Board (hereinafter State Board), Division of Drinking Water has issued Citation No. 03_19_18C_011, for failure to comply with the provisions of the California Health & Safety Code and Title 22, California Code of Regulations. Specifically, the Quail Valley Water District – Westside Water System (hereinafter "Water System") failed the total coliform maximum contaminant level (MCL) for the months of September, October, November 2017, and January 2018.

The California Safe Drinking Water Act, Section 116577, provides for the State Board to be reimbursed by the public water system for costs incurred for preparing and issuing an enforcement action to that system. Therefore, the Water System has been billed for the preparation and issuance of this citation. The State Board's current billing rate for enforcement activities is \$167 per hour. The hourly rate is subject to review and change upon approval. You will receive a bill for these costs following the end of the State's fiscal year, from our Fee Billing Unit in Sacramento.

Any person who is aggrieved by a citation, order or decision issued by the Deputy Director of the Division of Drinking Water under Article 8 (commencing with Health and Safety Code, Section 116625) or Article 9 (commencing with Health and Safety Code, Section 116650), of the Safe Drinking Water Act (Chapter 4, Part 12, Division 104, of the Health and Safety Code) may file a petition with the State Water Board for reconsideration of the citation, order or decision. **Appendix 1** to the enclosed Citation contains the relevant statutory provisions for filing a petition for reconsideration (Health and Safety Code, Section 116701).

Petitions must be received by the State Board within 30 days of the issuance of the citation, order or decision by the Deputy Director. The date of issuance is the date when the Division of Drinking Water mails a copy of the citation, order or decision. If the 30th day falls on a Saturday, Sunday, or state holiday, the petition is due the following business day. Petitions must be received by 5:00 p.m.

Information regarding filing petitions may be found at:

FELICIA MARCUS, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

4925 Commerce Drive, Suite 120, Bakersfield, CA 93309 | www.waterboards.ca.gov

http://www.waterboards.ca.gov/drinking_water/programs/petitions/index.shtml

If you have any questions regarding this matter, please contact our office at (661) 335-7315 or via email at dwpdist19@waterboards.ca.gov.

Sincerely,



Jaswinder S. Dhaliwal, P.E.
Senior Sanitary Engineer
DRINKING WATER FIELD OPERATIONS BRANCH

Enclosure: Citation #03_19_18C_011

Certified Mail No. 7012 1010 0001 3880 1645

cc: Kern County Dept. of Public Health, Environmental Health Division
Randy Hardenbrook, General Manager, Quail Valley Water District (via email)

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF DRINKING WATER

Name of Public Water System: Quail Valley Water District – Westside
Water System

Water System No: 1503226

Attention: Richard Cantrell, Office Manager
Quail Valley Water District
24750 Sand Canyon Road
Tehachapi, CA 93561

Issued: February 1, 2018

CITATION FOR NONCOMPLIANCE

TOTAL COLIFORM MAXIMUM CONTAMINANT LEVEL VIOLATION
CALIFORNIA CODE OF REGULATIONS, TITLE 22, SECTION 64426.1 (b)
September, October, November 2017, and January 2018

The California Health and Safety Code (hereinafter "CHSC"), Section 116650 authorizes the State Water Resources Control Board (hereinafter "State Board") to issue a citation to a public water system when the State Board determines that the public water system has violated or is violating the California Safe Drinking Water Act (hereinafter "California SDWA"), (CHSC, Division 104, Part 12, Chapter 4, commencing with Section 116270), or any regulation, standard, permit, or order issued or adopted thereunder.

1 The State Board, acting by and through its Division of Drinking Water
2 (hereinafter "Division") and the Deputy Director for the Division, hereby issues
3 this citation pursuant to Section 116650 of the CHSC to the Quail Valley Water
4 District – Westside Water System (hereinafter "Water System") for violation of
5 CHSC, Section 116555(a)(1), Section 116450 and California Code of
6 Regulations (hereinafter "CCR"), Title 22, Section 64426.1(b).

7
8 A copy of the applicable statutes and regulations are included in **Appendix 1**,
9 which is attached hereto and incorporated by reference.

10 11 **STATEMENT OF FACTS**

12 The Water System is classified as a community water system with a
13 population of 90, serving 35 connections. The State Board received laboratory
14 results for two (2) routine bacteriological samples, collected on September 18,
15 2017, from the distribution system. One (1) of these samples tested positive
16 for total coliform bacteria. Five (5) repeat samples were collected on
17 September 20, 2017, and three (3) of the repeat samples (collected from the
18 distribution system) tested positive for total coliform bacteria. The remaining
19 two (2) repeat samples (also counted towards the Ground Water Rule's
20 triggered source sampling requirement), collected on September 20, 2017,
21 from Umtali Well and Montclair Well, tested negative for total coliform
22 bacteria.

23
24 Due to the total coliform treatment technique trigger (per federal revised total
25 coliform rule) in September 2017, the Water System completed and submitted
26 a Level 1 Assessment report dated October 20, 2017. A potential cause of the
27 total coliform positive samples was determined to be numerous water main
28 breaks, caused by the heavy construction equipment being used for the

1 Umtali Road construction project. To help clear contamination from the
2 distribution system, the Water System inspected domestic water supply
3 facilities, and provided emergency disinfection and flushing of the distribution
4 system, specifically the Umtali line that runs along the Umtali Road.

5
6 In order to repair the main breaks, the Water System had to shut down the
7 distribution system, causing intermittent water outages and low pressure. Due
8 to the loss of pressure in the distribution system, the State Board issued a
9 precautionary Boil Water Notice (BWN) to the Water System on August 28,
10 2017. The BWN was updated and reissued on September 28, 2017, to reflect
11 the status of ongoing bacteriological contamination within the Water System,
12 and to notify the customers about the clean-up efforts made by the Water
13 System. The Water System is required to have two consecutive rounds of
14 total coliform negative samples to cancel the BWN. As of writing of this
15 citation, the BWN continues to be in effect since the Water System continues
16 to experience bacteriological quality problems in the distribution system and
17 has not been able to obtain two consecutive rounds of total coliform negative
18 samples.

19
20 The State Board received laboratory results for five (5) routine bacteriological
21 samples, collected on October 23, 2017, for the month of October 2017. Two
22 (2) of the five (5) routine samples tested positive for total coliform bacteria.
23 Two (2) additional samples (also counted towards the Ground Water Rule's
24 triggered source sampling requirement), collected on October 23, 2017 from
25 the Umtali Well and Montclair Well, tested negative for total coliform bacteria.
26 To help clear contamination from the distribution system, the Water System
27 again disinfected and flushed the Umtali line. On October 25, 2017, the Water
28 System collected two (2) special samples from the distribution system, and

1 two (2) special samples from the Water System's two storage tanks
2 (Montclair Tank and Umtali Tank). Three (3) of the four (4) special samples,
3 tested positive for total coliform bacteria, including the one (1) sample
4 collected from the Umtali Tank.

5
6 The State Board received laboratory results for five (5) special bacteriological
7 samples, collected from the distribution system and Umtali Tank, on
8 November 2, 2017. Two (2) of the five (5) special samples, tested positive for
9 total coliform bacteria. Five (5) additional special bacteriological samples were
10 collected from the distribution system and Umtali Tank, on November 9, 2017.
11 Three (3) out of the five (5) special samples tested positive for total coliform
12 bacteria.

13
14 The State Board received copies of the results of the five (5) routine
15 bacteriological samples collected on November 13 and 14, 2017, for the
16 month of November 2017. One (1) of five (5) routine samples tested positive
17 for total coliform bacteria. Three (3) additional special samples were collected
18 on November 13 and 14, 2017. One (1) special sample, collected from the
19 Umtali Tank, tested positive for total coliform bacteria. Two (2) of the three (3)
20 additional samples (also counted towards the Ground Water Rule's triggered
21 source sampling requirement), collected from Umtali Well and Montclair
22 Well, tested negative for total coliform bacteria. Three (3) repeat samples
23 were collected from the distribution system on November 16, 2017. One (1)
24 of the three (3) repeat samples tested positive for total coliform bacteria. To
25 help clear contamination from the distribution system, the Water System
26 inspected domestic water supply facilities, and again disinfected and flushed
27 the Umtali Tank and Umtali line. Four (4) special samples were collected from
28 the distribution system and Umtali Tank on November 27, 2017. Two (2) of

1 the four (4) special samples tested positive for total coliform bacteria. One (1)
2 special sample, collected from the distribution system on November 30, 2017,
3 tested positive for total coliform bacteria.

4
5 Five (5) routine samples collected on December 25, 2017, tested negative for
6 total coliform bacteria. Five (5) special samples were collected on December
7 26, 2017, from the distribution system and one (1) of these samples tested
8 positive for total coliform bacteria. The sampling on December 26, 2017, was
9 conducted in an effort to have two consecutive rounds of total coliform
10 negative samples.

11
12 None of the total coliform positive samples from September, October,
13 November 2017, or December 2017 showed the presence of fecal coliform
14 OR *Escherichia coli* (*E. coli*) bacteria.

15
16 The BWN was updated and reissued on November 3, 2017, to reflect the
17 status of ongoing bacteriological contamination within the Water System, and
18 to notify the customers about the clean-up efforts made by the Water System.

19
20 As discussed above, Tier 1 public notification (Boil Water Notice) due to loss
21 of pressure due to intermittent water outages (caused by shutdown of the
22 distribution system to make repairs) and loss of pressure in the distribution
23 system, numerous line breaks, and ongoing total coliform positive samples,
24 was provided on August 28, 2017, September 28, 2017, and November 3,
25 2017, for violation of Section 64426.1 (total coliform maximum contaminant
26 level) in conformance with CCR, Title 22, Sections 64463.4(b) & (c) and
27 64465. Copies of the BWN and certification documents are available on file.

1 Due to the second total coliform treatment technique trigger within 12 months,
2 the Water System was required to have a Level 2 Assessment completed, to
3 comply with the federal rTCR (**see Appendix 3**). On November 13, 2017,
4 Aayush Khurana, Water Resource Control Engineer with the Division
5 inspected the Water System to help complete the Level 2 Assessment. Dita
6 Amtey, Environmental Scientist with the Division was also present during the
7 site visit and assisted in completing the Level 2 Assessment. The findings of
8 the Level 2 Assessment were sent to the Water System by a letter dated
9 December 27, 2017 (**copy provided in Appendix 3**). In the Level 2
10 Assessment letter, the State Board directed the Water System to address
11 items related to cross-connection control program, cleaning of the Umtali Well
12 site to keep rodents and small animals out of the well enclosure, interior
13 inspection of the Umtali Tank and Montclair Tank, and cleaning of both
14 tanks. The State Board also recommended installation of continuous
15 chlorination treatment and maintain a detectable chlorine residual in the
16 distribution system. On January 30, 2018, the State Board received a written
17 response, dated January 24, 2018, from the Water System. A copy of the
18 response letter is provided in **Appendix 4**.

19
20 The Water System collected two (2) special samples from the distribution
21 system on December 12, 2017. One (1) of the special samples tested positive
22 for total coliform bacteria. Five (5) monthly routine samples collected on
23 December 25, 2017, for the month of December 2017, tested negative for
24 total coliform bacteria. Five (5) special samples were collected from the
25 distribution system on December 26, 2017, and one (1) of these samples
26 tested positive for total coliform bacteria. Five (5) special samples were
27 collected from the distribution system on January 3, 2018, and two (2) of these
28 samples tested positive for total coliform bacteria. Five (5) special samples

1 were collected from the distribution system on January 4, 2018, and one (1)
2 of these samples tested positive for total coliform bacteria. Three (3) special
3 samples were collected from the distribution system on January 10, 2018, and
4 all three (3) samples tested positive for total coliform bacteria. One (1) special
5 sample collected on January 10, 2018, from Umtali Well, tested negative for
6 total coliform bacteria. Four (4) special samples collected on January 15,
7 2018, from the distribution system tested negative for total coliform bacteria.
8 Four (4) samples were collected on January 18, 2018, from the distribution
9 system and one (1) of these samples tested positive for total coliform bacteria.
10 One (1) sample collected on January 18, 2018, from Montclair Tank tested
11 negative for total coliform bacteria.

12
13 Two (2) routine samples were collected on January 22, 2018, from the
14 distribution system and one (1) of these samples tested positive for total
15 coliform bacteria. One (1) sample collected on January 22, 2018, from
16 Montclair Tank tested negative for total coliform bacteria. Three (3) repeat
17 samples were collected on January 25, 2018, from the distribution system and
18 One (1) sample tested positive for total coliform bacteria. In addition, two (2)
19 additional samples (also counted towards the Ground Water Rule's triggered
20 source sampling requirement), collected from Umtali Well and Montclair
21 Well, tested negative for total coliform bacteria. One (1) sample collected on
22 January 25, 2018, from Montclair Tank tested negative for total coliform
23 bacteria.

24
25 None of the total coliform positive samples from January 2018, showed the
26 presence of fecal coliform OR *Escherichia coli* (*E. coli*) bacteria.

1 A summary of bacteriological samples, collected from January 2017 to
2 January 25, 2018, is provided under **Appendix 2**.

3
4 As discussed in this citation, the Water System has been experiencing
5 bacteriological quality problems since September 2017, with multiple total
6 coliform positive samples. **Appendix 2** shows a summary of all bacteriological
7 samples collected from the distribution system, storage tanks and sources. A
8 copy of the Water System's Bacteriological Sample Siting Plan (BSSP dated
9 June 15, 2016, is provided in **Appendix 5**. Also included in **Appendix 5**, is a
10 map of the Water System, showing the bacteriological sampling locations.
11 **Appendix 6** is a timeline of the actions taken by the Water System, starting
12 from December 19, 2017, to help clear bacteriological contamination from the
13 distribution system. Timeline of the actions taken by the Water System from
14 September 2017 to December 19, 2017, is provided under Level 2
15 Assessment in **Appendix 3**.

16
17 Based on the pattern of total coliform positive samples from September 2017
18 to now, the source of contamination seems to be originated from the
19 distribution system, starting from the Umtali Tank, which has tested positive
20 for total coliform bacteria multiple times. The Water System conducted a
21 visual inspection of the interior of the Umtali Tank and did not find any obvious
22 source of contamination. The contamination problem seems to be mostly
23 prevalent in the central part of the distribution system, in the vicinity of 2-ROU
24 (Country Canyon & Umtali), 3-ROU (24630 Nyamazi Court), and 5-ROU
25 (24630 Country Canyon). Per information provided by the Water System,
26 there are sediments/debris in the pipelines in the vicinity of the Umtali Road
27 and Nyamazi Court, and due to low velocity of flushing, the Water System has
28 not been able to flush out the sediments/debris from the distribution system.

1 Despite repeated efforts to provide emergency disinfection and flushing, the
2 Water System continues to experience bacteriological quality reports. After
3 taking into consideration the total coliform MCL violations in September 2017,
4 October 2017, November 2017, and January 2018, the State Board is going
5 to direct the Water System to install mandatory continuous chlorination
6 treatment at both wells and maintain a detectable chlorine residual throughout
7 the distribution system.

8 9 **DETERMINATION**

10 CCR, Title 22, Section 64426.1 (b), Total Coliform Maximum Contaminant
11 Level (MCL) states that a public water system which collects fewer than 40
12 bacteriological samples per month is in violation of the total coliform MCL if
13 more than one sample collected during any month is total coliform-positive.

14
15 The Water System took fewer than 40 bacteriological samples during
16 September, October, November 2017, and January 2018. One (1) routine
17 sample and three (3) repeat samples collected in September 2017 tested
18 positive for total coliform bacteria. Two (2) routine samples collected in
19 October 2017, tested positive for total coliform bacteria. One (1) routine
20 sample and one (1) repeat sample collected in November 2017, also tested
21 positive for total coliform bacteria. One (1) routine sample and one (1) repeat
22 sample collected in January 2018, also tested positive for total coliform
23 bacteria. Therefore, the State Board has determined that the Water System
24 violated CCR, Title 22, Section 64426.1(b) during September, October,
25 November 2017, and January 2018.

26 27 **DIRECTIVES**

28 The Water System is hereby directed to take the following actions:

- 1
2 1. Comply with CCR, Title 22, Section 64426.1 in all future monitoring
3 periods.
- 4
5 2. By February 28, 2018, the Water System shall submit a permit
6 amendment application to the State Board to allow for the installation
7 of operation of continuous chlorination of the water supply. The Water
8 System shall submit a completed permit amendment application and
9 continuous chlorination equipment shall be installed on the discharge
10 of the Water System's Umtali and Montclair Wells. Environmental
11 Information Form (EIF) shall be also submitted for the Umtali Well
12 location. Information regarding the permanent chlorination equipment
13 and installation procedures shall be also submitted to the State Board.
14 Aayush Khurana from the State Board recently emailed a copy of the
15 Operational Guidelines for Hypo-Chlorination Systems to the Water
16 System. A blank Chlorination Data Sheet and Chlorination Treatment
17 Operation Plan (**templates already emailed to Mr. Hardenbrook**)
18 shall be completed and returned to the State Board at the time of
19 submittal of the permit amendment application. The installation of
20 chlorination treatment shall be conducted by a person qualified and
21 experienced with chlorination equipment.
- 22
23 3. Starting from March 1, 2018, a detectable chlorine residual shall be
24 maintained in all areas of the distribution system at all times. The
25 chlorine residual shall be measured at the time and location of the
26 collection of the monthly distribution system bacteriological samples
27 and all other samples collected downstream of the chlorine injection

1 point and reported to the State Board on the laboratory analysis
2 reports.

3
4 4. The chlorination treatment shall be operated in accordance with an
5 approved operations plan for the chlorination treatment. The Water
6 System shall utilize either Certified Distribution Operators or Treatment
7 Operators to operate the chlorination equipment. The operator(s) shall
8 visit and review the chlorination treatment on at least a weekly basis
9 and document the date and time of the visit, the settings on the
10 chemical feed equipment, the chlorine stock on hand and the chlorine
11 residual in the distribution system. The State Board recommends daily
12 inspection of the chlorination equipment. Records of documentation of
13 the site visits and chlorination treatment shall be maintained and a
14 summary of the treatment shall be submitted to the State Board by the
15 10th day of the following month, in the format, specified by the State
16 Board.

17
18 5. Starting from the month of February 2018, the Water System shall
19 initiate monthly sampling of the raw well water for coliform bacteria.
20 The sample must be collected at a location ahead of chlorination and
21 results reported in MPN/100 mL. The results of all samples shall be
22 submitted to the State Board by the 10th day of the following month.

23
24 6. The Water System shall develop and implement a flushing program for
25 the distribution system following installation of the continuous
26 chlorination treatment. The Water System shall maintain records of the
27 flushing program and submit a monthly summary to the State Board by
28 the 10th day of the following month.

7. The Water System shall initiate distribution sampling for TTHM and HAA5 on an annual basis starting 3rd quarter of 2018 (July 1, 2018-September 30, 2018). The Stage 2 DBPR Monitoring Plan form (blank template already emailed to Mr. Hardenbrook) shall be completed and submitted to the State Board by February 28, 2018, for review and approval. The sample(s) must be collected during the month of warmest water temperature (July, August or September) from a location representing the maximum residence time in the distribution system. If the annual sample(s) exceeds the MCL, the monitoring frequency will be increased to one sample per quarter. The Water System must notify the State Board if an exceedance of the TTHM, HAA5 MCLs or Chlorine Disinfectant MRDL (maximum residual disinfectant level) of 4.0 mg/L occurs. These levels are listed below.

Contaminant	MCL
Total Trihalomethane (TTHM)	0.080 mg/L
Haloacetic Acids (HAA5)	0.060 mg/L
	MRDL
Chlorine	4.0 mg/L as Cl ₂

All submittals required by this Citation shall be electronically submitted to the Division at the following address. The subject line for all electronic submittals corresponding to this citation shall include the following information: Water System name and number, citation number and title of the document being submitted.

Jaswinder S. Dhaliwal, P.E.
Senior Sanitary Engineer
dwpdist19@waterboards.ca.gov

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The State Board reserves the right to make such modifications to this Citation as it may deem necessary to protect public health and safety. Such modifications may be issued as amendments to this Citation and shall be effective upon issuance.

Nothing in this Citation relieves the Water System of its obligation to meet the requirements of the California SDWA (CHSC, Division 104, Part 12, Chapter 4, commencing with Section 116270), or any regulation, standard, permit or order issued or adopted thereunder.

PARTIES BOUND

This Citation shall apply to and be binding upon the Water System, its owners, shareholders, officers, directors, agents, employees, contractors, successors, and assignees.

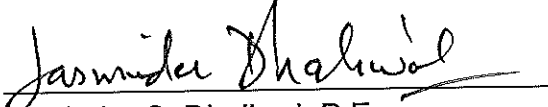
SEVERABILITY

The directives of this Citation are severable, and the Water System shall comply with each and every provision thereof notwithstanding the effectiveness of any provision.

FURTHER ENFORCEMENT ACTION

The California SDWA authorizes the State Board to: issue a citation or order with assessment of administrative penalties to a public water system for violation or continued violation of the requirements of the California SDWA or any regulation, permit, standard, citation, or order issued or adopted thereunder including, but not limited to, failure to correct a violation identified in a citation or compliance order. The California SDWA also authorizes the

1 State Board to take action to suspend or revoke a permit that has been issued
2 to a public water system if the public water system has violated applicable law
3 or regulations or has failed to comply with an order of the State Board, and to
4 petition the superior court to take various enforcement measures against a
5 public water system that has failed to comply with an order of the State Board.
6 The State Board does not waive any further enforcement action by issuance
7 of this Citation.

8
9 
10 Jaswinder S. Dhaliwal, P.E.
11 Senior Sanitary Engineer
12 DRINKING WATER FIELD OPERATIONS BRANCH

Feb. 1, 2018
Date

13
14 **Appendices (6):**

- 15
16 1. Applicable Statutes and Regulations
17 2. Summary of Bacteriological Sampling Results from January
18 2017 to January 25, 2018
19 3. Level 2 Assessment - Issued December 27, 2017
20 4. Response to Level 2 Assessment-Letter dated Jan. 24, 2018
21 5. Bacteriological Sample Siting Plan dated June 15, 2016, along
22 with Maps of the Water System
23 6. Timeline of the Actions Taken by the Water System, Starting
24 from December 19, 2017
25

26 **Certified Mail No. 7012 1010 0001 3880 1645**

27
28 cc: Kern County Dept. of Public Health, Env. Health Division (w/o appendices)
29 Randy Hardenbrook, General Manager, Quail Valley Water District (via email)
30

31 JSD/da

APPENDIX 1. APPLICABLE STATUTES AND REGULATIONS FOR CITATION NO. 03_19_18C_011

NOTE: The following language is provided for the convenience of the recipient, and cannot be relied upon as the State of California's representation of the law. The published codes are the only official representation of the law. Regulations related to drinking water are in Titles 22 and 17 of the California Code of Regulations. Statutes related to drinking water are in the Health & Safety Code, the Water Code, and other codes.

California Health and Safety Code (CHSC):

Section 116271 states in relevant part:

(a) The State Water Resources Control Board succeeds to and is vested with all of the authority, duties, powers, purposes, functions, responsibilities, and jurisdiction of the State Department of Public Health, its predecessors, and its director for purposes of all of the following:

- (1) The Environmental Laboratory Accreditation Act (Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101).
- (2) Article 3 (commencing with Section 106875) of Chapter 4 of Part 1.
- (3) Article 1 (commencing with Section 115825) of Chapter 5 of Part 10.
- (4) This chapter and the Safe Drinking Water State Revolving Fund Law of 1997 (Chapter 4.5 (commencing with Section 116760)).
- (5) Article 2 (commencing with Section 116800), Article 3 (commencing with Section 116825), and Article 4 (commencing with Section 116875) of Chapter 5.
- (6) Chapter 7 (commencing with Section 116975).
- (7) The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Division 43 (commencing with Section 75001) of the Public Resources Code).
- (8) The Water Recycling Law (Chapter 7 (commencing with Section 13500) of Division 7 of the Water Code).
- (9) Chapter 7.3 (commencing with Section 13560) of Division 7 of the Water Code.
- (10) The California Safe Drinking Water Bond Law of 1976 (Chapter 10.5 (commencing with Section 13850) of Division 7 of the Water Code).
- (11) Wholesale Regional Water System Security and Reliability Act (Division 20.5 (commencing with Section 73500) of the Water Code).
- (12) Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Division 26.5 (commencing with Section 79500) of the Water Code).

(b) The State Water Resources Control Board shall maintain a drinking water program and carry out the duties, responsibilities, and functions described in this section. Statutory reference to "department," "state department," or "director" regarding a function transferred to the State Water Resources Control Board shall refer to the State Water Resources Control Board. This section does not impair the authority of a local health officer to enforce this chapter or a county's election not to enforce this chapter, as provided in Section 116500...

- (k)
- (1) The State Water Resources Control Board shall appoint a deputy director who reports to the executive director to oversee the issuance and enforcement of public water system permits and other duties as appropriate. The deputy director shall have public health expertise.
 - (2) The deputy director is delegated the State Water Resources Control Board's authority to provide notice, approve notice content, approve emergency notification plans, and take other action pursuant to Article 5 (commencing with Section 116450), to issue, renew, reissue, revise, amend, or deny any public water system permits pursuant to Article 7 (commencing with Section 116525), to suspend or revoke any public water system permit pursuant to Article 8 (commencing with Section 116625), and to issue citations, assess penalties, or issue orders pursuant to Article 9 (commencing with Section 116650). Decisions and actions of the deputy director taken pursuant to Article 5 (commencing with Section 116450) or Article 7 (commencing with Section 116525) are deemed decisions and actions taken, but are not subject to reconsideration, by the State Water Resources Control Board. Decisions and actions of the deputy director taken pursuant to Article 8 (commencing with Section 116625) and Article 9 (commencing with Section 116650) are deemed decisions and actions taken by the State Water Resources Control Board, but any aggrieved person may petition the State Water Resources Control Board for reconsideration of the decision or action. This subdivision is not a limitation on the State Water Resources Control Board's authority to delegate any other powers and duties.

Section 116555 states in relevant part:

(a) Any person who owns a public water system shall ensure that the system does all of the following:

- (1) Complies with primary and secondary drinking water standards.
- (2) Will not be subject to backflow under normal operating conditions.
- (3) Provides a reliable and adequate supply of pure, wholesome, healthful, and potable water.

Section 116650 states in relevant part:

(a) If the state board determines that a public water system is in violation of this chapter or any regulation, permit, standard, citation, or order issued or adopted thereunder, the state board may issue a citation to the public water system. The citation shall be served upon

the public water system personally or by certified mail. Service shall be deemed effective as of the date of personal service or the date of receipt of the certified mail. If a person to whom a citation is directed refuses to accept delivery of the certified mail, the date of service shall be deemed to be the date of mailing.

(b) Each citation shall be in writing and shall describe the nature of the violation or violations, including a reference to the statutory provision, standard, order, citation, permit, or regulation alleged to have been violated.

(c) A citation may specify a date for elimination or correction of the condition constituting the violation.

(d) A citation may include the assessment of a penalty as specified in subdivision (e).

(e) The state board may assess a penalty in an amount not to exceed one thousand dollars (\$1,000) per day for each day that a violation occurred, and for each day that a violation continues to occur. A separate penalty may be assessed for each violation and shall be in addition to any liability or penalty imposed under any other law.

Section 116655 of the CHSC, states in relevant part:

"(a) Whenever the State Board determines that any person has violated or is violating this chapter, or any permit, regulation, or standard issued or adopted pursuant to this chapter, the director may issue an order doing any of the following:

(1) Directing compliance forthwith.

(2) Directing compliance in accordance with a time schedule set by the State Board.

(3) Directing that appropriate preventive action be taken in the case of a threatened violation.

(b) An order issued pursuant to this section may include, but shall not be limited to, any or all of the following requirements:

(1) That the existing plant, works, or system be repaired, altered, or added to.

(2) That purification or treatment works be installed.

(3) That the source of the water supply be changed.

(4) That no additional service connection be made to the system.

(5) That the water supply, the plant, or the system be monitored.

(6) That a report on the condition and operation of the plant, works, system, or water supply be submitted to the State Board."

Section 116701 of the CHSC, states in relevant part:

"(a) Within 30 days of issuance of an order or decision issued by the deputy director under Article 8 (commencing with Section 116625) or Article 9 (commencing with Section 116650), an aggrieved person may petition the state board for reconsideration. Where the order or decision of the deputy director is issued after a hearing under Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code, this section shall apply instead of Section 11521 of the Government Code.

(b) The petition shall include the name and address of the petitioner, a copy of the order or decision for which the petitioner seeks reconsideration, identification of the reason the petitioner alleges the issuance of the order was inappropriate or improper, the specific action the petitioner requests, and other information as the state board may prescribe. The petition shall be accompanied by a statement of points and authorities of the legal issues raised by the petition.

(c) The evidence before the state board shall consist of the record before the deputy director and any other relevant evidence that, in the judgment of the state board, should be considered to implement the policies of this chapter. The state board may, in its discretion, hold a hearing for receipt of additional evidence.

(d) The state board may refuse to reconsider the order or decision if the petition fails to raise substantial issues that are appropriate for review, may deny the petition upon a determination that the issuance of the order or decision was appropriate and proper, may set aside or modify the order or decision, or take other appropriate action. The state board's action pursuant to this subdivision shall constitute the state board's completion of its reconsideration.

(e) The state board, upon notice and hearing, if a hearing is held, may stay in whole or in part the effect of the order or decision of the deputy director.

(f) If an order of the deputy director is subject to reconsideration under this section, the filing of a petition for reconsideration is an administrative remedy that must be exhausted before filing a petition for writ of mandate under Section 116625 or 116700."

California Code of Regulations, Title 22 (CCR):

Section 64421 (General Requirements) states:

(a) Each water supplier shall:

(1) Develop a routine sample siting plan as required in section 64422;

(2) Collect routine, repeat and replacement samples as required in Sections 64423, 64424, and 64425;

(3) Have all samples analyzed by laboratories approved to perform those analyses by the State Board and report results as required in section 64423.1;

(4) Notify the State Board when there is an increase in coliform bacteria in bacteriological samples as required in section 64426; and

(5) Comply with the Maximum Contaminant Level as required in section 64426.1.

(b) Water suppliers shall perform additional bacteriological monitoring as follows:

(1) After construction or repair of wells;

(2) After main installation or repair;

(3) After construction, repair, or maintenance of storage facilities; and

(4) After any system pressure loss to less than five psi. Samples collected shall represent the water quality in the affected portions of the system.

Section 64422 (Routine Sample Siting Plan) states:

(a) By September 1, 1992, each water supplier shall develop and submit to the State Board a siting plan for the routine collection of samples for total coliform analysis, subject to the following:

(1) The sample sites chosen shall be representative of water throughout the distribution system including all pressure zones, and areas supplied by each water source and distribution reservoir.

(2) The water supplier may rotate sampling among the sample sites if the total number of sites needed to comply with (a)(1) above exceeds the number of samples required according to Table 64423-A. The rotation plan shall be described in the sample siting plan.

(b) If personnel other than certified operators will be performing field tests and/or collecting samples, the sample siting plan shall include a declaration that such personnel have been trained, pursuant to §64415 (b).

(c) The supplier shall submit an updated plan to the State Board at least once every ten years and at any time the plan no longer ensures representative monitoring of the system.

Section 64423 (Routine Sampling) states:

(a) Each water supplier shall collect routine bacteriological water samples as follows:

(1) The minimum number of samples for community water systems shall be based on the known population served or the total number of service connections, whichever results in the greater number of samples, as shown in Table 64423-A. A community water system using groundwater which serves 25-1000 persons may request from the State Board a reduction in monitoring frequency. The minimum reduced frequency shall not be less than one sample per quarter.

(2) The minimum number of samples for nontransient-noncommunity water systems shall be based on the known population served as shown in Table 64423-A during those months when the system is operating. A nontransient-noncommunity water system using groundwater which serves 25-1000 persons may request from the State Board a reduction in monitoring frequency if it has not violated the requirements in this article during the past twelve months. The minimum reduced frequency shall not be less than one sample per quarter.

(3) The minimum number of samples for transient-noncommunity water systems using groundwater and serving 1000 or fewer persons a month shall be one in each calendar quarter during which the system provides water to the public.

(4) The minimum number of samples for transient-noncommunity water systems using groundwater and serving more than 1000 persons during any month shall be based on the known population served as shown in Table 64423-A, except that the water supplier may request from the State Board a reduction in monitoring for any month the system serves 1000 persons or fewer. The minimum reduced frequency shall not be less than one sample in each calendar quarter during which the system provides water to the public.

(5) The minimum number of samples for transient-noncommunity water systems using approved surface water shall be based on the population served as shown in Table 64423-A. A system using groundwater under the direct influence of surface water shall begin monitoring at this frequency by the end of the sixth month after the State Board has designated the source to be approved surface water.

(6) A public water system shall collect samples at regular time intervals throughout the month, except that a system using groundwater which serves 4,900 persons or fewer may collect all required samples on a single day if they are taken from different sites.

(b) In addition to the minimum sampling requirements, all water suppliers using approved surface water which do not practice treatment in compliance with Sections 64650 through 64666, shall collect a minimum of one sample before or at the first service connection each day during which the turbidity level of the water delivered to the system exceeds 1 NTU. The sample shall be collected within 24 hours of the exceedance and shall be analyzed for total coliforms. If the water supplier is unable to collect and/or analyze the sample within the 24-hour time period because of extenuating circumstances beyond its control, the supplier shall notify the State Board within the 24-hour time period and may request an extension. Sample results shall be included in determining compliance with the MCL for total coliforms in Section 64426.1.

(c) If any routine, repeat, or replacement sample is total coliform-positive, then the water supplier shall collect repeat samples in accordance with Section 64424 and comply with the reporting requirements specified in Sections 64426 and 64426.1.

Table 64423-A

Minimum Number of Routine Total Coliform Samples

Monthly Population Served	Service Connections	Minimum Number of Samples
25 to 1000	15 to 400	1 per month
1,001 to 2,500	401 to 890	2 per month
2,501 to 3,300	891 to 1,180	3 per month
3,301 to 4,100	1,181 to 1,460	4 per month
4,101 to 4,900	1,461 to 1,750	5 per month
4,901 to 5,800	1,751 to 2,100	6 per month
5,801 to 6,700	2,101 to 2,400	7 per month
6,701 to 7,600	2,401 to 2,700	2 per week
7,601 to 12,900	2,701 to 4,600	3 per week
12,901 to 17,200	4,601 to 6,100	4 per week
17,201 to 21,500	6,101 to 7,700	5 per week
21,501 to 25,000	7,701 to 8,900	6 per week
25,001 to 33,000	8,901 to 11,800	8 per week

Monthly Population Served	Service Connections	Minimum Number of Samples
33,001 to 41,000	11,801 to 14,600	10 per week
41,001 to 50,000	14,601 to 17,900	12 per week
50,001 to 59,000	17,901 to 21,100	15 per week
59,001 to 70,000	21,101 to 25,000	18 per week
70,001 to 83,000	25,001 to 29,600	20 per week
83,001 to 96,000	29,601 to 34,300	23 per week
96,001 to 130,000	34,301 to 46,400	25 per week
130,001 to 220,000	46,401 to 78,600	30 per week
220,001 to 320,000	78,601 to 114,300	38 per week
320,001 to 450,000	114,301 to 160,700	50 per week
450,001 to 600,000	160,701 to 214,300	55 per week
600,001 to 780,000	214,301 to 278,600	60 per week
780,001 to 970,000	278,601 to 346,400	70 per week
970,001 to 1,230,000	346,401 to 439,300	75 per week
1,230,001 to 1,520,000	439,301 to 542,900	85 per week
1,520,001 to 1,850,000	542,901 to 660,700	90 per week
1,850,001 to 2,270,000	660,701 to 810,700	98 per week
2,270,001 to 3,020,000	810,701 to 1,078,600	105 per week
3,020,001 to 3,960,000	1,078,601 to 1,414,300	110 per week
3,960,001 or more	1,414,301 or more	120 per week

Section 64423.1 (Sample Analysis and Reporting of Results) states:

(a) The water supplier shall designate (label) each sample as routine, repeat, replacement, or "other" pursuant to Section 64421(b), and have each sample analyzed for total coliforms. The supplier also shall require the laboratory to analyze the same sample for fecal coliforms or *Escherichia coli* (*E. coli*) whenever the presence of total coliforms is indicated. As a minimum, the analytical results shall be reported in terms of the presence or absence of total or fecal coliforms, or *E. coli* in the sample, whichever is appropriate.

(b) The water supplier shall require the laboratory to notify the supplier within 24 hours, whenever the presence of total coliforms, fecal coliforms or *E. coli* is demonstrated in a sample or a sample is invalidated due to interference problems, pursuant to Section 64425(b), and shall ensure that a contact person is available to receive these analytical results 24-hours a day. The water supplier shall also require the laboratory to immediately notify the State Board of any positive bacteriological results if the laboratory cannot make direct contact with the designated contact person within 24 hours.

(c) Analytical results of all required samples collected for a system in a calendar month shall be reported to the State Board not later than the tenth day of the following month, as follows:

(1) The water supplier shall submit a monthly summary of the bacteriological monitoring results to the State Board.

(2) For systems serving fewer than 10,000 service connections or 33,000 persons, the water supplier shall require the laboratory to submit copies of all required bacteriological monitoring results directly to the State Board.

(3) For systems serving more than 10,000 service connections, or 33,000 persons, the water supplier shall require the laboratory to submit copies of bacteriological monitoring results for all positive routine samples and all repeat samples directly to the State Board.

(d) Laboratory reports shall be retained by the water supplier for a period of at least five years and shall be made available to the State Board upon request.

Section 64424 (Repeat Sampling) states in relevant part:

(a) If a routine sample is total coliform-positive, the water supplier shall collect a repeat sample set as described in paragraph (1) within 24 hours of being notified of the positive result. The repeat samples shall all be collected within the same 24 hour time period. A single service connection system may request that the State Board allow the collection of the repeat sample set over a four-day period.

(1) For a water supplier that normally collects more than one routine sample a month, a repeat sample set shall be at least three samples for each total coliform-positive sample. For a water supplier that normally collects one or fewer samples per month, a repeat sample set shall be at least four samples for each total coliform-positive sample.

(2) If the water supplier is unable to collect the samples within the 24-hour time period specified in subsection (a) or deliver the samples to the laboratory within 24 hours after collection because of circumstances beyond its control, the water supplier shall notify the State Board within 24 hours. The State Board will then determine how much time the supplier will have to collect the repeat samples.

(b) When collecting the repeat sample set, the water supplier shall collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken. Other repeat samples shall be collected within five service connections upstream or downstream of the original site. At least one sample shall be from upstream and one from downstream unless there is no upstream and/or downstream service connection.

(c) If one or more samples in the repeat sample set is total coliform-positive, the water supplier shall collect and have analyzed an additional set of repeat samples as specified in subsections (a) and (b). The supplier shall repeat this process until either no coliforms are detected in one complete repeat sample set or the supplier determines that the MCL for total coliforms specified in Section 64426.1 has been exceeded and notifies the State Board.

(d) If a public water system for which fewer than five routine samples/month are collected has one or more total coliform-positive samples, the water supplier shall collect at least five routine samples the following month. If the supplier stops supplying water during the month after the total coliform-positive(s), at least five samples shall be collected during the first month the system resumes operation. A water supplier may request the State Board waive the requirement to collect at least five routine samples the following month, but a waiver will not be granted solely on the basis that all repeat samples are total coliform-negative. To request a waiver, one of the following conditions shall be met:

- (1) The State Board conducts a site visit before the end of the next month the system provides water to the public to determine whether additional monitoring and/or corrective action is necessary to protect public health.
- (2) The State Board determines why the sample was total coliform-positive and establishes that the system has corrected the problem or will correct the problem before the end of the next month the system serves water to the public. If a waiver is granted, a system shall collect at least one routine sample before the end of the next month it serves water to the public and use it to determine compliance with Section 64426.1.

Section 64425 (Sample Invalidation) states:

(a) A water supplier may request the Department to invalidate a sample for which a total coliform-positive result has been reported if the supplier demonstrates:

- (1) All repeat sample(s) collected at the same tap as the original total coliform-positive sample also are total coliform-positive and all repeat samples collected within five service connections of the original tap are not total coliform-positive; or
- (2) The laboratory did not follow the prescribed analytical methods pursuant to §64415(a), based on a review of laboratory documentation by the Department. The supplier shall submit to the Department a written request for invalidation along with the laboratory documentation, the supplier's sample collection records and any observations noted during sample collection and delivery. The water supplier shall require the laboratory to provide the supplier with documentation which shall include, but not be limited to:

- (A) A letter from the director of the laboratory having generated the data, confirming the invalidation request by reason of laboratory accident or error;
- (B) Complete sample identification, laboratory sample log number (if used), date and time of collection, date and time of receipt by the laboratory, date and time of analysis for the sample(s) in question;
- (C) Complete description of the accident or error alleged to have invalidated the result(s);
- (D) Copies of all analytical, operating, and quality assurance records pertaining to the incident in question; and
- (E) Any observations noted by laboratory personnel when receiving and analyzing the sample(s) in question.

(b) Whenever any total coliform sample result indicative of the absence of total coliforms has been declared invalid by the laboratory due to interference problems as specified at 40 Code Federal Regulations, Section 141.2100(c)(2), the supplier shall collect a replacement sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The supplier shall continue to re-sample at the original site within 24 hours and have the samples analyzed until a valid result is obtained.

Section 64426 (Significant Rise in Bacterial Count) states in relevant part:

(a) Any of the following criteria shall indicate a possible significant rise in bacterial count:

- (1) A system collecting at least 40 samples per month has a total coliform-positive routine sample followed by two total coliform-positive repeat samples in the repeat sample set;
- (2) A system has a sample which is positive for fecal coliform or *E. coli*; or
- (3) A system fails the total coliform Maximum Contaminant Level (MCL) as defined in Section 64426.1.

(b) When the coliform levels specified in subsection (a) are reached or exceeded, the water supplier shall:

- (1) Contact the State Board by the end of the day on which the system is notified of the test result or the system determines that it has exceeded the MCL, unless the notification or determination occurs after the State Board office is closed, in which case the supplier shall notify the State Board within 24 hours; and
- (2) Submit to the State Board information on the current status of physical works and operating procedures which may have caused the elevated bacteriological findings, or any information on community illness suspected of being waterborne. This shall include, but not be limited to:

- (A) Current operating procedures that are or could potentially be related to the increase in bacterial count;
- (B) Any interruptions in the treatment process;
- (C) System pressure loss to less than 5 psi;
- (D) Vandalism and/or unauthorized access to facilities;
- (E) Physical evidence indicating bacteriological contamination of facilities;
- (F) Analytical results of any additional samples collected, including source samples;
- (G) Community illness suspected of being waterborne; and
- (H) Records of the investigation and any action taken.

Section 64426.1 (Total Coliform Maximum Contaminant Level (MCL)) states in relevant part:

(a) Results of all samples collected in a calendar month pursuant to Sections 64423, 64424, and 64425 that are not invalidated by the State Board or the laboratory shall be included in determining compliance with the total coliform MCL. Special purpose samples such as those listed in section 64421(b) and samples collected by the water supplier during special investigations shall not be used to determine compliance with the total coliform MCL.

(b) A public water system is in violation of the total coliform MCL when any of the following occurs:

- (1) For a public water system which collects at least 40 samples per month, more than 5.0 percent of the samples collected during any month are total coliform-positive; or
- (2) For a public water system which collects fewer than 40 samples per month, more than one sample collected during any month is total coliform-positive; or
- (3) Any repeat sample is fecal coliform-positive or E. coli-positive; or
- (4) Any repeat sample following a fecal coliform-positive or E. coli-positive routine sample is total coliform-positive.

(c) If a public water system is not in compliance with paragraphs (b)(1) through (4), during any month in which it supplies water to the public, the water supplier shall notify the State Board by the end of the business day on which this is determined, unless the determination occurs after the State Board office is closed, in which case the supplier shall notify the State Board within 24 hours of the determination. The water supplier shall also notify the consumers served by the water system. A Tier 2 Public Notice shall be given for violations of paragraph (b)(1) or (2), pursuant to section 64463.4. A Tier 1 Public Notice shall be given for violations of paragraph (b)(3) or (4), pursuant to section 64463.1.

Section 64463.1 (Tier 1 Public Notice) states in relevant part:

(a) A water system shall give public notice pursuant to this section and section 64465 if any of the following occurs:

(1) Violation of the total coliform MCL when:

(A) Fecal coliform or E. coli are present in the distribution system; or

(B) When any repeat sample tests positive for coliform and the water system fails to test for fecal coliforms or E. coli in the repeat sample;...

(b) As soon as possible within 24 hours after learning of any of the violations in subsection (a) or being notified by the State Board that it has determined there is a potential for adverse effects on human health [pursuant to paragraph (a)(4), (5), or (6)], the water system shall:

(1) Give public notice pursuant to this section;

(2) Initiate consultation with the State Board within the same timeframe; and

(3) Comply with any additional public notice requirements that are determined by the consultation to be necessary to protect public health.

(c) A water system shall deliver the public notice in a manner designed to reach residential, transient, and nontransient users of the water system and shall use, as a minimum, one of the following forms:

(1) Radio or television;

(2) Posting in conspicuous locations throughout the area served by the water system;

(3) Hand delivery to persons served by the water system; or

(4) Other method approved by the State Board, based on the method's ability to inform water system users.

Section 64463.4 (Tier 2 Public Notice) states:

(a) A water system shall give public notice pursuant to this section if any of the following occurs:

(1) Any violation of the MCL, MRDL, and treatment technique requirements, except:

(A) Where a Tier 1 public notice is required under section 64463.1; or

(B) Where the State Board determines that a Tier 1 public notice is required, based on potential health impacts and persistence of the violations;

(2) All violations of the monitoring and testing procedure requirements in sections 64421 through 64426.1, article 3 (Primary Standards – Bacteriological Quality), for which the State Board determines that a Tier 2 rather than a Tier 3 public notice is required, based on potential health impacts and persistence of the violations;

(3) Other violations of the monitoring and testing procedure requirements in this chapter, and chapters 15.5, 17 and 17.5, for which the State Board determines that a Tier 2 rather than a Tier 3 public notice is required, based on potential health impacts and persistence of the violations; or

(4) Failure to comply with the terms and conditions of any variance or exemption in place.

(b) A water system shall give the notice as soon as possible within 30 days after it learns of a violation or occurrence specified in subsection (a), except that the water system may request an extension of up to 60 days for providing the notice. This extension would be subject to the State Board's written approval based on the violation or occurrence having been resolved and the State Board's determination that public health and welfare would in no way be adversely affected. In addition, the water system shall:

(1) Maintain posted notices in place for as long as the violation or occurrence continues, but in no case less than seven days;

(2) Repeat the notice every three months as long as the violation or occurrence continues. Subject to the State Board's written approval based on its determination that public health would in no way be adversely affected, the water system may be allowed to notice less frequently but in no case less than once per year. No allowance for reduced frequency of notice shall be given in the case of a total coliform MCL violation or violation of a Chapter 17 treatment technique requirement; and

(3) For turbidity violations pursuant to sections 64652.5(c)(2) and 64653(c), (d) and (f), as applicable, a water system shall consult with the State Board as soon as possible within 24 hours after the water system learns of the violation to determine whether a Tier 1 public notice is required. If consultation does not take place within 24 hours, the water system shall give Tier 1 public notice within 48 hours after learning of the violation.

(c) A water system shall deliver the notice, in a manner designed to reach persons served, within the required time period as follows:

(1) Unless otherwise directed by the State Board in writing based on its assessment of the violation or occurrence and the potential for adverse effects on public health and welfare, community water systems shall give public notice by;

(A) Mail or direct delivery to each customer receiving a bill including those that provide their drinking water to others (e.g., schools or school systems, apartment building owners, or large private employers), and other service connections to which water is delivered by the water system; and
(B) Use of one or more of the following methods to reach persons not likely to be reached by a mailing or direct delivery (renters, university students, nursing home patients, prison inmates, etc.):

1. Publication in a local newspaper;
2. Posting in conspicuous public places served by the water system, or on the Internet; or
3. Delivery to community organizations.

(2) Unless otherwise directed by the State Board in writing based on its assessment of the violation or occurrence and the potential for adverse effects on public health and welfare, noncommunity water systems shall give the public notice by:

(A) Posting in conspicuous locations throughout the area served by the water system; and

(B) Using one or more of the following methods to reach persons not likely to be reached by a public posting:

1. Publication in a local newspaper or newsletter distributed to customers;
2. E-mail message to employees or students;
3. Posting on the Internet or intranet; or
4. Direct delivery to each customer.

Section 64465 (Public Notice Content and Format) states in relevant part:

(a) Each public notice given pursuant to this article, except Tier 3 public notices for variances and exemptions pursuant to subsection (b), shall contain the following:

(1) A description of the violation or occurrence, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);

(2) The date(s) of the violation or occurrence;

(3) Any potential adverse health effects from the violation or occurrence, including the appropriate standard health effects language from appendices 64465-A through G;

(4) The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in drinking water;

(5) Whether alternative water supplies should be used;

(6) What actions consumers should take, including when they should seek medical help, if known;

(7) What the water system is doing to correct the violation or occurrence;

(8) When the water system expects to return to compliance or resolve the occurrence;

(9) The name, business address, and phone number of the water system owner, operator, or designee of the water system as a source of additional information concerning the public notice;

(10) A statement to encourage the public notice recipient to distribute the public notice to other persons served, using the following standard language: —Please share this information with all the other people who drink this water, especially those who may not have received this public notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail; and

(11) For a water system with a monitoring and testing procedure violation, this language shall be included: "We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period dates], we ['did not monitor or test or 'did not complete all monitoring or testing'] for [contaminant(s)], and therefore, cannot be sure of the quality of your drinking water during that time." ...

(c) A public water system providing notice pursuant to this article shall comply with the following multilingual-related requirements:

(2) For a Tier 2 or Tier 3 public notice:

(A) The notice shall contain information in Spanish regarding the importance of the notice, or contain a telephone number or address where Spanish-speaking residents may contact the public water system to obtain a translated copy of the notice or assistance in Spanish; and

(B) When a non-English speaking group other than Spanish-speaking exceeds 1,000 residents or 10 percent of the residents served by the public water system, the notice shall include:

1. Information in the appropriate language(s) regarding the importance of the notice; or
2. A telephone number or address where such residents may contact the public water system to obtain a translated copy of the notice or assistance in the appropriate language; and

(3) For a public water system subject to the Dymally-Alatorre Bilingual Services Act, Chapter 17.5, Division 7, of the Government Code (commencing with section 7290), meeting the requirements of this Article may not ensure compliance with the Dymally-Alatorre Bilingual Services Act.

(d) Each public notice given pursuant to this article shall:

(1) Be displayed such that it catches people's attention when printed or posted and be formatted in such a way that the message in the public notice can be understood at the eighth-grade level;

(2) Not contain technical language beyond an eighth-grade level or print smaller than 12 point; and

(3) Not contain language that minimizes or contradicts the information being given in the public notice.

Appendix 64465-A. Health Effects Language - Microbiological Contaminants.

Contaminant	Health Effects Language
Total Coliform	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal coliform/E. coli	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Turbidity	Turbidity has no health effects. However, high levels of turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Section 64469 (Reporting Requirements) states in relevant part:

- (d) Within 10 days of giving initial or repeat public notice pursuant to Article 18 of this Chapter, except for notice given under section 64463.7(d), each water system shall submit a certification to the State Board that it has done so, along with a representative copy of each type of public notice given.

Section 64481 (Content of the Consumer Confidence Report) states in relevant part:

- (g) For the year covered by the report, the Consumer Confidence Report shall note any violations of paragraphs (1) through (7) and give related information, including any potential adverse health effects, and the steps the system has taken to correct the violation.
- (1) Monitoring and reporting of compliance data.

**APPENDIX 2. Summary of Bacteriological Results from Jan. 2017 to
Jan. 2018 for Citation No. 03_19_18C_011**

Quail Valley WD-Westside System

1503226

Distribution System Freq: 1/M

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>CI2</i>	<i>Violation</i>	<i>Comment</i>
1/16/2017	11:01	2ROU-CC & Umtali	A	A		Routine			
1/16/2017	11:23	1ROU-Upper Hillview PRV	A	A		Routine			
2/13/2017	11:55	2ROU-CC & Umtali	A	A		Routine			
2/13/2017	12:17	1ROU-Upper Hillview PRV	A	A		Routine			
3/20/2017	18:15	2ROU-CC & Umtali	A	A		Routine			
3/20/2017	18:50	1ROU-Upper Hillview PRV	A	A		Routine			
4/10/2017	10:35	1ROU-Upper Hillview PRV	A	A		Routine			
4/10/2017	10:55	2ROU-CC & Umtali	A	A		Routine			
5/8/2017	12:30	2ROU-CC & Umtali	A	A		Routine			
5/8/2017	12:45	1ROU-Upper Hillview PRV	A	A		Routine			
6/5/2017	14:50	2ROU-CC & Umtali	A	A		Routine			
6/5/2017	15:30	1ROU-Upper Hillview PRV	A	A		Routine			
7/10/2017	12:10	2ROU-CC & Umtali	A	A		Routine			
7/10/2017	12:26	1ROU-Upper Hillview PRV	A	A		Routine			
7/13/2017	12:10	Sand Canyon B/O	A	A		Other			
8/14/2017	6:45	1ROU-Upper Hillview PRV	A	A		Routine			
8/14/2017	8:00	2ROU-CC & Umtali	A	A		Routine			
9/18/2017	11:44	1ROU-Upper Hillview PRV	A	A		Routine			
9/18/2017	11:55	2ROU-CC & Umtali	P	A		Routine			

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>CI2</i>	<i>Violation</i>	<i>Comment</i>
9/20/2017	16:06	2REP2-24630 Nyamazi Ct.	P	A		Repeat		MCL	Citation No. 03_19_18C_011 issued. Level 1 Assessment Completed on 10/20/2017.
9/20/2017	16:10	2REP3-24630 Country	P	A		Repeat			
9/20/2017	16:13	2REP1-CC & Umtali	P	A		Repeat			
10/23/2017	14:01	1ROU-Upper Hillview PRV	A	A		Routine			
10/23/2017	14:27	3ROU-24630 Nyamazi Ct.	P	A		Routine			
10/23/2017	14:32	2ROU-CC & Umtali	P	A		Routine		MCL	Citation No. 03_19_18C_011 issued. Level 2 Assessment Completed on 11/13/2017.
10/23/2017	14:35	5ROU-24630 Country	A	A		Routine			
10/23/2017	16:38	4ROU- Montcalire	A	A		Routine			
10/25/2017	15:11	Montclair Tank	A	A		Other			
10/25/2017	15:28	Umtali Tank	P	A		Other			
10/25/2017	15:35	3ROU-24630 Nyamazi Ct.	P	A		Other			
10/25/2017	15:40	2ROU-CC & Umtali	P	A		Other			
11/2/2017	11:45	Umtali Tank	A	A		Other			
11/2/2017	11:52	2ROU-CC & Umtali	P	A		Other			
11/2/2017	11:56	CC Booster Station	A	A		Other			
11/2/2017	12:00	3ROU-24630 Nyamazi Ct.	P	A		Other			
11/2/2017	12:07	Sand Canyon B/O	A	A		Other			
11/9/2017	12:02	Sand Canyon B/O	A	A		Other			
11/9/2017	12:24	2ROU-CC & Umtali	P	A		Other			
11/9/2017	12:28	3ROU-24630 Nyamazi Ct.	P	A		Other			

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>CI2</i>	<i>Violation</i>	<i>Comment</i>
11/9/2017	12:32	Umtali Tank	A	A		Other			
11/9/2017	14:25	CC Booster Station	P	A		Other			
11/13/2017	15:43	4ROU-Montclair	A	A		Routine			
11/13/2017	15:52	1ROU-Upper Hillview PRV	A	A		Routine			
11/14/2017	9:41	5ROU-24630 Country	A	A		Routine			
11/14/2017	9:47	2ROU-CC & Umtali	A	A		Routine			
11/14/2017	9:49	3ROU-24630 Nyamazi Ct.	P	A		Routine			
11/14/2017	10:04	Umtali Tank	P	A		Other			
11/16/2017	9:20	3REP2-Umtali Tank	A	A		Repeat			
11/16/2017	9:28	3REP1-24630 Nyamazi Ct.	P	A		Repeat	MCL		Citation No. 03_19_18C_011 issued. Level 2 Assessment Completed on 11/13/2017.
11/16/2017	9:34	3REP3-CC & Umtali	A	A		Repeat			
11/27/2017	12:14	2ROU-CC & Umtali	P	A		Other			
11/27/2017	12:17	CC Booster Station	A	A		Other			
11/27/2017	12:44	Umtali Tank	A	A		Other			
11/27/2017	12:50	3ROU-24630 Nyamazi Ct.	P	A		Other			
11/30/2017	11:56	3ROU-24630 Nyamazi Ct.	P	A		Other			
12/12/2017	12:19	3ROU-24630 Nyamazi Ct.	P	A		Other			
12/12/2017	12:23	2ROU-CC & Umtali	A	A		Other			
12/25/2017	12:55	5ROU-24630 Country	A	A		Routine			
12/25/2017	13:00	2ROU-CC & Umtali	A	A		Routine			
12/25/2017	13:19	4ROU-Montclair	A	A		Routine			

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>Cl2</i>	<i>Violation</i>	<i>Comment</i>
12/25/2017	13:27	1ROU-Upper Hillview PRV	A	A		Routine			
12/25/2017	13:35	3ROU-24630 Nyamazi Ct.	A	A		Routine			
12/26/2017	7:58	5ROU-24630 Country	A	A		Other			
12/26/2017	8:02	2ROU-CC & Umtali	A	A		Other			
12/26/2017	8:07	3ROU-24630 Nyamazi Ct.	P	A		Other			
12/26/2017	8:35	1ROU-Upper Hillview PRV	A	A		Other			
12/26/2017	8:42	4ROU-Montclair	A	A		Other			
1/3/2018	17:12	5ROU-24630 Country	A	A		Other			
1/3/2018	17:17	2ROU-CC & Umtali	P	A		Other			
1/3/2018	17:30	1ROU-Upper Hillview PRV	A	A		Other			
1/3/2018	17:37	4ROU-Montclair	A	A		Other			
1/3/2018	17:53	3ROU-24630 Nyamazi Ct.	P	A		Other			
1/4/2018	12:44	4ROU-Montclair	A	A		Other			
1/4/2018	12:52	1ROU-Upper Hillview PRV	A	A		Other			
1/4/2018	13:14	3ROU-24630 Nyamazi Ct.	A	A		Other			
1/4/2018	13:18	2ROU-CC & Umtali	P	A		Other			
1/4/2018	13:20	5ROU-24630 Country	A	A		Other			
1/10/2018	10:55	5ROU-24630 Country	P	A		Other			
1/10/2018	10:58	3ROU-Nyamazi Ct.	P	A		Other			
1/10/2018	11:04	Nyamazi PRV	P	A		Other			
1/15/2018	12:44	2ROU-CC & Umtali	A	A		Other			
1/15/2018	12:58	3ROU-24630 Nyamazi Ct.	A	A		Other			

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>Cl2</i>	<i>Violation</i>	<i>Comment</i>
1/15/2018	13:08	Sand Canyon B/O	A	A		Other			
1/15/2018	13:14	5ROU-24630 Country	A	A		Other			
1/18/2018	11:36	4ROU	A	A		Other			
1/18/2018	11:44	1ROU-Upper Hillview PRV	A	A		Other			
1/18/2018	11:55	3ROU-24630 Nyamazi Ct.	P	A		Other			
1/18/2018	11:58	2ROU-CC & Umtali	A	A		Other			
1/18/2018	13:23	Montclair Tank	A	A		Other			
1/22/2018	10:55	1ROU-Upper Hillview PRV	A	A		Routine			
1/22/2018	11:02	4ROU-Montclair	A	A		Other			
1/22/2018	11:10	Montclair Tank	A	A		Other			
1/22/2018	11:28	2ROU-CC & Umtali	P	A		Routine			
1/25/2018	9:42	Montclair Tank	A	A		Other			
1/25/2018	10:10	2REP2-24630 Nyamazi Ct.	A	A		Repeat			
1/25/2018	10:15	2REP1-CC & Umtali	P	A		Repeat		MCL	Citation No. 03_19_18C_011 issued.
1/25/2018	10:20	2REP3-24630 Country	A	A		Repeat			

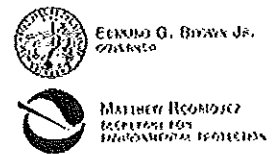
Quail Valley WD-Westside System

1503226

Source Monitoring Freq: 1/M

<i>Sample Date</i>	<i>Time</i>	<i>Source</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Violation</i>	<i>Comment</i>
9/20/2017	16:00	Umtali Well	A	A			GWR
9/20/2017	16:29	Montclair Well	A	A			GWR
10/23/2017	13:55	Montclair Well	A	A			
10/23/2017	14:15	Umtali Well	A	A			
11/13/2017	15:46	Montclair Well	A	A			GWR
11/13/2017	16:10	Umtali Well	A	A			GWR
1/10/2018	11:09	Umtali Well	A	A			
1/25/2018	9:46	Montclair Well	A	A			GWR & Repeat Sample
1/25/2018	10:00	Umtali Well	A	A			GWR & Repeat Sample

APPENDIX 3. Level 2 Assessment – Issued December 27, 2017



State Water Resources Control Board
Division of Drinking Water

December 27, 2017

Randy Hardenbrook, General Manager
Quail Valley Water District
24750 Sand Canyon Rd.
Tehachapi, CA 93561

SUBJECT: LEVEL 2 ASSESSMENT OF QUAIL VALLEY WATER DISTRICT – WESTSIDE WATER SYSTEM (NO. 1503226)

Dear Mr. Hardenbrook:

On November 13, 2017, Aayush Khurana, Water Resource Control Engineer with the State Water Resources Control Board (State Board), Division of Drinking Water, inspected Quail Valley Water District – Westside Water System (QVWD) to complete a Level 2 Assessment. Dita Amtey, Environmental Scientist with the State Board was also present during the site visit and assisted in completing the Level 2 Assessment.

The Level 2 Assessment was required under the federal revised Total Coliform Rule, following the *Coliform Treatment Technique Trigger* in September, October, and November 2017. A copy of the Level 2 Assessment Form is in **Enclosure A**. Pictures taken during the inspection are in **Enclosure B**. A summary of all bacteriological sample results submitted by QVWD during this period is in **Enclosure C**.

Initially, QVWD believed that the cause of bacteriological contamination in the distribution system was due to repeated main line breaks, caused by Umtali Road realignment, and construction activities in the area. A summary of all main line breaks during this period is in **Enclosure D**. QVWD responded by disinfecting the Umtali storage tank and flushing the water main downstream of the storage tank. However, routine and repeat samples were still positive for total coliform bacteria, especially the 24630 Nyamazi and Country Canyon sample stations. QVWD pulled the 24630 Nyamazi sample station and pressure relief valve out of service, disinfected, and reinstalled them. Follow-up samples were collected from 24630 Nyamazi and Country Canyon sample stations to ensure that the bacteriological contamination was mitigated.

The State Board identified the following items that should also be addressed to avoid future bacteriological contamination in the distribution system.

1. Within 90 days, have a certified Cross-Connection Control Program Specialist complete a cross-connection survey of the Water System. Submit the survey report, along with a timeline to address the current/possible contaminating activities mentioned in the survey report.

ELIKA MARCUS, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

4925 Commerce Drive, Suite 120, Bakersfield, CA 93309 | www.waterboards.ca.gov

December 27, 2017

2. Within 30 days, clean the Umtali Well enclosure and prevent entry of mice and other small rodents. There were mice droppings around the wellhead during the inspection. See Picture 4.
3. Within 60 days, inspect the inside of Umtali storage tank. Take pictures of the water surface and the tank's sidewalls and submit them to the State Board. Drain, clean, and disinfect the tank using a pressure hose.
4. Within 60 days, inspect the inside of Montclair storage tank. Take pictures of the water surface and the tank's sidewalls and submit them to the State Board. Drain, clean, and disinfect the tank using a pressure hose.
5. Recommendation: Provide continuous chlorination treatment for the entire Water System and maintain detectable chlorine residual in the distribution system.

High residence time of water in storage tanks, the inlet-outlet arrangements of storage tanks, and the lack of continuous chlorination treatment also increase the probability of positive total coliform sample results in the distribution system. Old steel pipelines in the distribution system, with biofilm inside, may be also contributing to the bacteriological quality problems in the distribution system. Please note that the State Board will require mandatory installation of continuous chlorination treatment if the Water System has another total coliform MCL violation within 12 months of September 2017.

Please implement the action items stated above to lower the chance of future bacteriological contamination. Within 30 days, please submit a written response to the State Board addressing the corrective action items mentioned above. If you have any questions regarding this letter, please contact Aayush Khurana at (661) 335-7346.

Sincerely,



Jaswinder S. Dhaliwal, P.E.
Senior Sanitary Engineer
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF DRINKING WATER

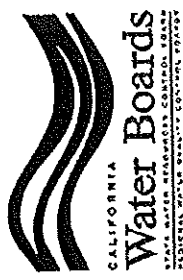
ENCLOSURES

- Enclosure A: Level 2 Assessment Form
- Enclosure B: Inspection Pictures
- Enclosure C: Bacteriological Sample Results Summary
- Enclosure D: Timeline of Umtali Mainline Breaks & Repairs

cc: Kern County Dep. of Public Health, Environmental Health Division (w/o enclosures)
Richard Cantrell, Office Manager, QVWD (via email)

Enclosure A

Level 2 Assessment Form



REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

This form is intended to assist Division of Drinking Water (DDW) or Local Primacy Agency (LPA) Staff in completing the investigation required by the federal revised Total Coliform Rule (rTCR) [effective April 1, 2016]. If the answer has a large box around it, it is an issue and needs to be described by LPA or DDW in the next column. Please include the question number in the description. The PWS must address each issue described in the Corrective Action column. To avoid a violation, the water system must submit to DDW/LPA a completed assessment report no later than 30 days after the trigger date.

PWS ID#: 1503226		PWS Name: Quail Valley Water District- Westside System		Circle one: CWS NTNC / TNC		
Operator in Responsible Charge (print name): Randy Hardenbrook		Phone: 661-822-1923				
Assessment trigger date: 10/23/2017		Date Assessment Completed: 11/13/2017				
SEASONAL: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Reason for Assessment: 2 Treatment Technique Violations in a 12 Month Period (Sept./Oct. 2017)				
Person who collected TC positive samples: Randy Hardenbrook		Contact info for person who collected samples: 661-822-1923				
Name of Certified Lab conducting sample analysis: BC Laboratories						
Assessment Elements		Y	N	N/A	Issue Description	Corrective Action Taken or Planned to be Taken and Date
1. Review of the sample sites		Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
		Country Canyon				
		Sample Site				
1.1	Was the sample taken at the routine coliform site? List the name(s) of the positive sample site(s).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.2	Was the tap area unsanitary at the time of sampling?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.3	Was this sample taken from an outside faucet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.4	Was the sample taken from a swivel tap?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.5	Did the tap have a point of use treatment device on it?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.6	Does the building where the sample was taken have a point of entry device?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.7	Has this location undergone any plumbing replacements or repairs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.7 Sample site newly installed from time of road work	
1.8	Are there any possible cross connections around the sample site (including yard hydrants and stock tanks)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.9	Is this location near a storage tank or dead end?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.10	Have there been any analytical results or any additional samples collected, including source samples, which were positive (not for compliance)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.10 TC+ each time tested from September	
1.11	Prior to this incident, when was the most recent satisfactory coliform samples taken?				1.11 * Before new sample site was installed	
1.12	Any other sample site issues not previously mentioned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

Assessment Elements	Y	N	N/A	Issue Description	Corrective Action Taken or Planned to be Taken and Date
Review of the sample sites					
24630 Nyamazi					
1.1.1 Was the sample taken at the routine coliform site? List the name(s) of the positive sample site(s).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.2.1 Was the tap area unsanitary at the time of sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.2.1 Threads on sample tap used for October sample	
1.3.1 Was this sample taken from an outside faucet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.4.1 Was the sample taken from a swivel tap?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.5.1 Did the tap have a point of use treatment device on it?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.6.1 Does the building where the sample was taken have a point of entry device?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1.7.1 Has this location undergone any plumbing replacements or repairs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.7.1 Water main replaced after 1 st TC+ sample	
1.8.1 Are there any possible cross connections around the sample site (including yard hydrants and stock tanks)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.9.1 Is this location near a storage tank or dead end?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.10.1 Have there been any analytical results or any additional samples collected, including source samples, which were positive (not for compliance)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.10.1 Specials collected Nov. 2017 were TC+	
1.11.1 Prior to this incident, when was the most recent satisfactory coliform samples taken? Date:	Aug. 2017			1.11.1 Before new sample site was installed	
1.12.1 Any other sample site issues not previously mentioned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		1.2.1 New sample site does not have threads

Assessment Elements	Y	N	N/A	Issue Description	Corrective Action Taken or Planned to be Taken and Date
2. Review of sample protocol					
2.1 Was the positive sample(s) taken by the operator in responsible charge? Provide name of sampler.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.1 Randy Hardenbrook	
2.2 Is the sampler a regular, trained sampler?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.3 Was a laboratory-provided TC sample bottle used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.4 Was the aerator removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.4 No aerators	
2.5 Was the water tap flushed for at least 5 minutes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.6 Was the tap disinfected or flamed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.6 Chlorine Solution	
2.7 Did the sample get too warm prior to being placed on ice?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2.8 Were there other sampler errors? Describe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

		Indicate Element number being described.		Indicate Element number being described.	
		Y	N	N/A	
2.9	If it is a seasonal system, were there any problems during the most recent start-up procedure?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2.10	Any other sample protocol issues not previously mentioned (e.g. vandalism or unauthorized access)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.	Review of the distribution system.				
3.1	Have any mains or service lines recently been repaired, replaced or installed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Have fire hydrants or blow offs been recently flushed/used/sheared?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.2 Blow-offs flushed during shutoffs due to breaks during Umtali Road realignment.
3.3	Have valves been recently exercised to direct flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4	Any leaks or main breaks noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5	Are all of the backflow prevention devices operational and maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.5 No backflow prevention devices exist yet.
3.6	Was there a total loss of pressure, low pressure (<20 psi) or changes in water pressure? If yes, when?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	Any areas of the distribution with low disinfectant levels (<0.2 mg/L)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.7 Batch chlorination after repeat positives
3.8	Any recent pump station failures or repairs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.9	Air relief valve leaking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.10	Standing water or debris in (air relief) valve vault?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.11	Any recent power loss?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.12	Any unprotected cross connections (including yard hydrants and stock tanks)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.12 Possible x-connections exist on the customers' property
3.13	Has high turbidity been detected in the distribution system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.13 During repairs
3.14	Is there evidence of intentional contamination or vandalism?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.15	Any other distribution issue not previously mentioned (e.g. other O&M activities that could have introduced coliforms)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.	Review of storage tank(s) (Note the specific facility if any issues are found)	Y	N	N/A	Indicate Element number being described.
		Montclair Storage Tank			
4.1	Is there a presence of animals or insects in the tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4.1 Unknown
4.2	Are there breaches or holes of any sort into tank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.3	Is there any presence of animal droppings around openings, vents or overflows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.4	Is there sediment buildup and floating debris in tank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.4 Unknown but likely because both inlet/outlet are located at the bottom of the tank
4.5	Have the tank(s) been cleaned within the last 5 years? If not, list when it was last cleaned.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.6	Are the vents and overflows protected against entry from animals, insects or other contaminants?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4.6 Unknown. Overflow is screened.

REVISED TOTAL COLIFORM RULE (RTC) – LEVEL 2 ASSESSMENT

4.7	Are the screens damaged or not properly installed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<p>4.10 Unknown</p> <p>4.11 Unknown</p> <p>4.19 Some open space exists below portions of the security fence.</p>	Indicate Element number being described.	
4.8	Does the reservoir have a common inlet/outlet?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.9	Is the overflow pipe directly connected to a tank drain, sanitary sewer or storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.10	Does the hatch have a solid, water proof, shoebox type lid that is properly sealed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
4.11	Was the hatch locked or secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
4.12	Has the tank been accidentally drained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.13	Have there been high flows through the tank?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
4.14	Was there high water age in the tank (infrequent water use)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.15	Was the sample taken when the tank was at the low level mark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.16	Failure or improper operation on tank telemetry/altitude valves/controls?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.17	Any recent repairs on the tank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.18	Was there any power loss?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.19	Is the site secured (e.g. fencing, locked gates, etc.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
4.20	Was the tank vandalized or subject to tampering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4.21	Any other storage tank issues not previously mentioned above?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.	Review of storage tank(s) (Note the specific facility if any issues are found)	Umtali Storage Tank						Indicate Element number being described.
5.1	Is there a presence of animals or insects in the tank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				5.4 Sand at bottom, possibly some lime scale
5.2	Are there breaches or holes of any sort into tank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.3	Is there any presence of animal droppings around openings, vents or overflows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.4	Is there sediment buildup and floating debris in tank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
5.5	Have the tank(s) been cleaned within the last 5 years? If not, list when it was last cleaned.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.6	Are the vents and overflows protected against entry from animals, insects or other contaminants?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
5.7	Are the screens damaged or not properly installed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.8	Does the reservoir have a common inlet/outlet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
5.9	Is the overflow pipe directly connected to a tank drain, sanitary sewer or storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5.10	Does the hatch have a solid, water proof, shoebox type lid that is properly sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
5.11	Was the hatch locked or secured?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
5.12	Has the tank been accidentally drained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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5.13 Since flushing and leaks

5.13 Have there been high flows through the tank?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.14 Was there high water age in the tank (infrequent water use)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.15 Was the sample taken when the tank was at the low level mark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.16 Failure or improper operation on tank telemetry/altitude valves/controls?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.17 Any recent repairs on the tank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.18 Was there any power loss?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.19 Is the site secured (e.g. fencing, locked gates, etc.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5.20 Was the tank vandalized or subject to tampering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.21 Any other storage tank issues not previously mentioned above?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Pressure Tanks (if applicable)	<input checked="" type="checkbox"/>	N	N/A			
5.22 What is the volume of the pressure tank? Attach additional sheets if needed.	Approximately 60 gallons					
5.23 What is the age of the pressure tank? Attach additional sheets if needed.	2010 (estimate)					
5.24 Does the pressure tank use a bladder and/or air compressor? Attach additional sheets if needed.	yes					
5.25 Did the pressure tank(s) deviate from normal operating pressure?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.26 Is the compressor pump running more than normal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
5.27 Is the tank bladder water logged?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.28 Is the tank damaged, rusty, leaking or have holes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.29 Was there any recent work performed on the tank?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.30 Is the air relief vent (if there one) screened and facing down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5.31 Can the inside of the pressure tank be visually inspected through an inspection port? If so, when was it last inspected?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
6. Sources – Well(s)	Y	N	N/A			
6. (Note the specific facility if any issues are found)						
	Montclair Well					
6.1 Is there a 50 foot annular seal?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.2 Is the surface seal defective or damaged or not water tight?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
6.3 Is there a casing vent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.4 Does the casing and/or air relief vent have a screen to prevent the entry of insects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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6.5	Does the vent and pump to waste terminate in an air gap of at least three pipe diameters above the ground?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.6	How is the well used? (Circle if applicable)	Primary		
6.7	Are there any unprotected cross connections at the wellhead?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.8	Are there any unprotected openings in the pump or pump assembly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.9	Is the pitless adapter damaged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.10	Are there any exposed holes or cracks near the wellhead? For example electric conduit.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.11	Has there been any recent work performed on the pump?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.12	Is the wellhead secured to prevent unauthorized access?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.13	Have there been any sewer spills, source water spills or other disturbances near the well?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.14	Is the wellhead at least 18-inches above grade?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.15	Is there evidence of standing water near the wellhead?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.16	Is the well pit in standing water or evidence of flooding?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.17	Any other well issues not previously mentioned above?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.	Sources – Well(s) (Note the specific facility if any issues are found)	Y	N	N/A
6.1.1	Is there a 50 foot annular seal?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2.1	Is the surface seal defective or damaged or not water tight?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.3.1	Is there a casing vent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4.1	Does the casing and/or air relief vent have a screen to prevent the entry of insects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5.1	Does the vent and pump to waste terminate in an air gap of at least three pipe diameters above the ground?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.6.1	How is the well used? (Circle if applicable)	Primary		
6.7.1	Are there any unprotected cross connections at the wellhead?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.8.1	Are there any unprotected openings in the pump or pump assembly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.9.1	Is the pitless adapter damaged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.10.1	Are there any exposed holes or cracks near the wellhead? For example electric conduit.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.11.1	Has there been any recent work performed on the pump?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.15 There is a leak at the well head

6.2.1 Large crack at corner of cement

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

6.12.1	Is the wellhead secured to prevent unauthorized access?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.13.1	Have there been any sewer spills, source water spills or other disturbances near the well?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.14.1	Is the wellhead at least 18-inches above grade?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.15.1	Is there evidence of standing water near the wellhead?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.16.1	Is the well pit in standing water or evidence of flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.17.1	Any other well issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applicable to all sources				
6.30	Has an unapproved source been used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.31	Has there been a change in sources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.32	Has there been recent rapid snowmelt, heavy rainfall or flooding?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.33	Any evidence of animals near the source?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.34	Have there been changes in available source water (e.g. significant drop in water table, reservoir capacity)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.35	Is the source water sample for ground water systems E. coli positive? This may indicate that the positive sample is originating from the source and may be a continuous source of contamination.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.36	Any other source issues not previously mentioned above?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	General Operations			Indicate Element number being described
7.1	During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.2	What were the symptoms of illness if you received complaints about customers being sick?	No		
7.3	Were there any extreme weather/natural events (e.g. heat, freezing, raining, windy, fires, earthquakes etc)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	Significant Deficiencies			Indicate Element number being described
8.1	Are there any unaddressed significant deficiencies? This may indicate that the problem is known and is in the process of being remedied. Include approved corrective action date and status of each corrective action.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				See attached timeline/log

1. Attach additional sheets if needed.

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Additional Comments:

-Water System uses 4oz calcium hypochlorite (16 tablets) per gallon solution to disinfect part of the distribution system downstream of Umtali Tank. One gallon of solution is added to Umtali Storage tank when the level of the tank is approximately 10,000 gallons. This is equivalent to a dose of ~2 mg/L of disinfectant. Mixing in the tank is not possible. However, according to QVWD, free chlorine residuals of ~0.2 mg/L are measured at the end of the distribution system. Customers have also noticed/complained the presence of a chlorine smell during disinfection stages.

-Sample stations were installed week of 11/6/2017 at Country Canyon and Nyamazi sample sites. Prior to this, hose bibs were used for sampling.

-Umtali well site has rodent droppings around the well head.

-Umtali Storage Tank has 2 common inlet/outlet lines

- Montclair Storage Tank has no access to the top, and has therefore not been inspected in the last 5 years. Sample from this tank comes from the Montclair Well when the well is not running.

Name of SWRCB-Division of Drinking Water or LPA representative completing the form (PRINTED):

Signature:

Date:

Water system responsible party (PRINTED):

Signature:

Date:

Reserved for Regulatory Agency (DDW / LPA) Review

	Yes	No	Comments
1. Has assessment been successfully completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Likely reason for EC+ occurrence has been found.	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3. System has corrected the problem.	<input type="checkbox"/>	<input type="checkbox"/>	
4. Were all issues identified corrected?	<input type="checkbox"/>	<input type="checkbox"/>	
4. Corrective Action Approved?	<input type="checkbox"/>	<input type="checkbox"/>	

REVISED TOTAL COLIFORM RULE (RTCR) - LEVEL 2 ASSESSMENT

Additional Comments:

Name of SWRCB-Division of Drinking Water or LPA representative completing the form (PRINTED): **PRAYUSH KHORANA**

Date: **11/13/17**

Signature:  **Prayush Khorana**

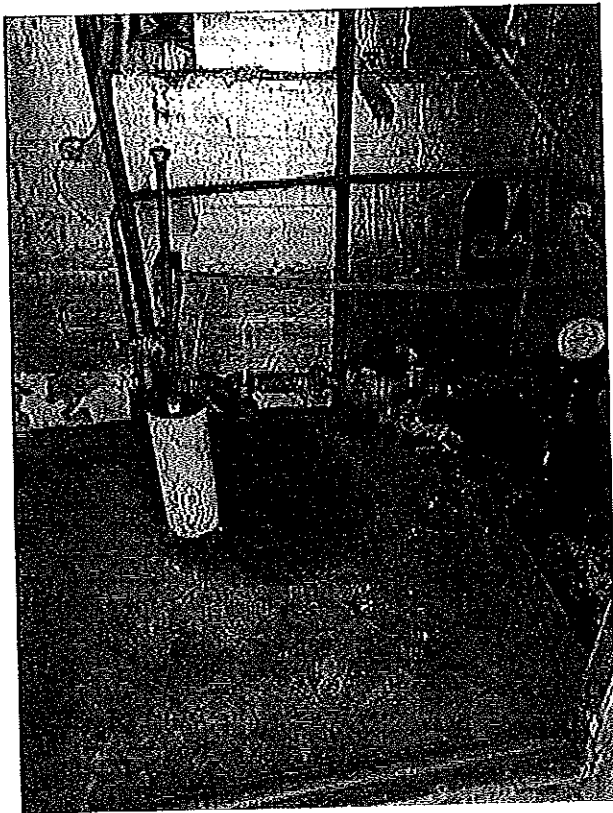
Date: **11/13/17**

Signature:

Reserved for Regulatory Agency (DDW / LPA) Review		Yes	No	Comments
1. Has assessment been successfully completed?		<input type="checkbox"/>	<input type="checkbox"/>	
2. Likely reason for EC+ occurrence has been found.		<input type="checkbox"/>	<input type="checkbox"/>	
3. System has corrected the problem.		<input type="checkbox"/>	<input type="checkbox"/>	
4. Were all issues identified corrected?		<input type="checkbox"/>	<input type="checkbox"/>	
4. Corrective Action Approved?		<input type="checkbox"/>	<input type="checkbox"/>	

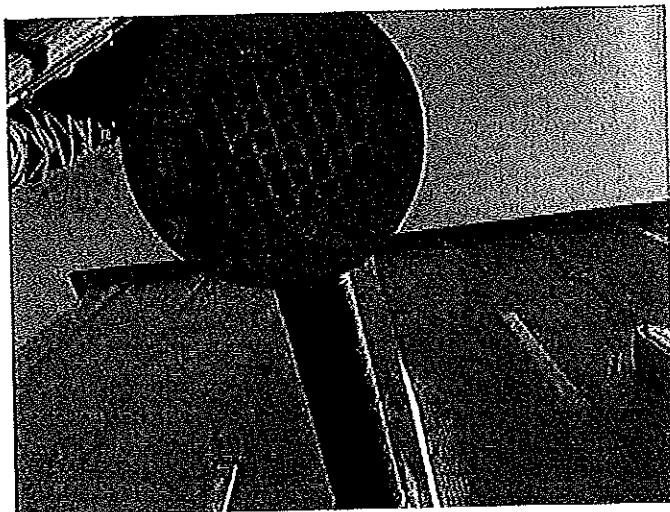
Enclosure B

Inspection Pictures



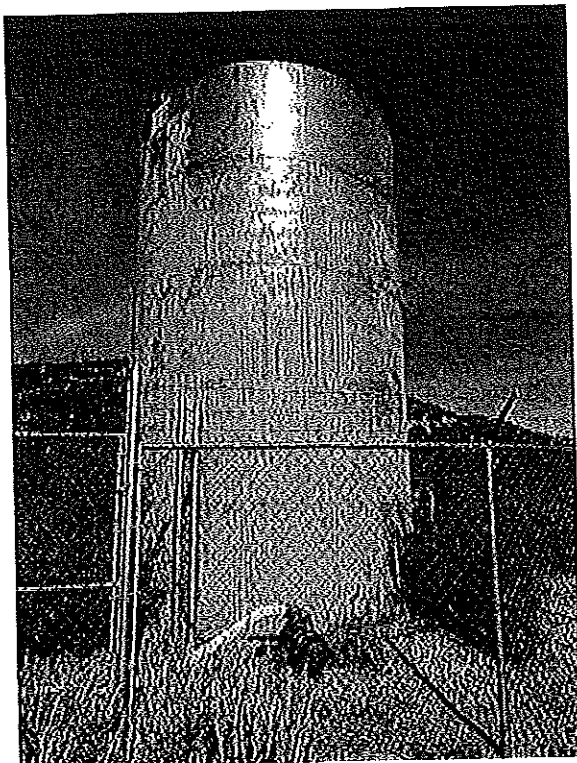
Picture 1

This is Montclair Well. A wooden building encloses the wellsite. The condition of the wellhead and the site is adequate. The casing vent is screened and the concrete pad is intact. There were no signs of rodent entry inside the well enclosure. The sample tap for the well is on the left adjacent to the casing vent. Samples from Montclair tank are collected from a tap on the right (below the pressure gauge). The Montclair well must be offline when samples representing Montclair tank are collected.



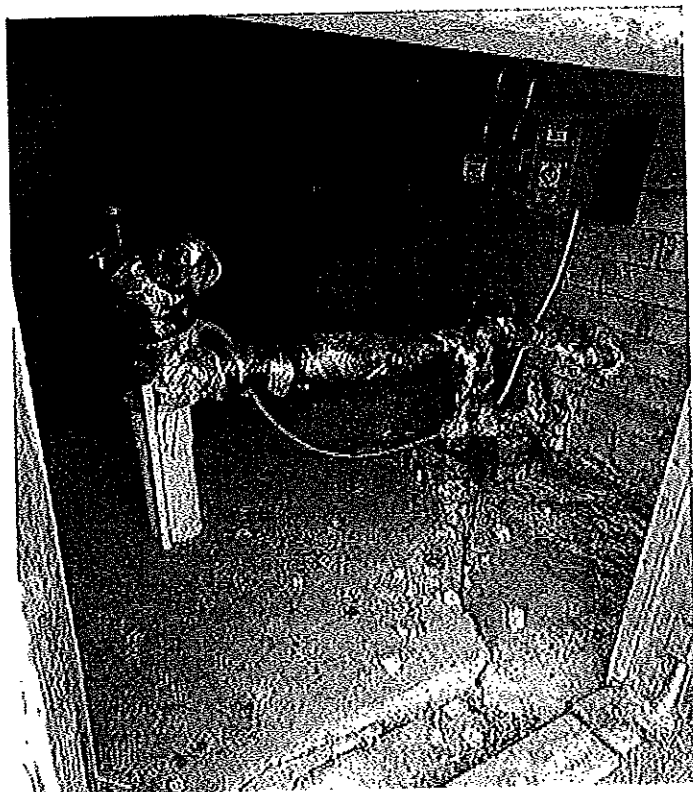
Picture 2

This is Montclair Well's pump-to-waste outlet. The pores of this screen are too large. All screens must be metal and 24-mesh.



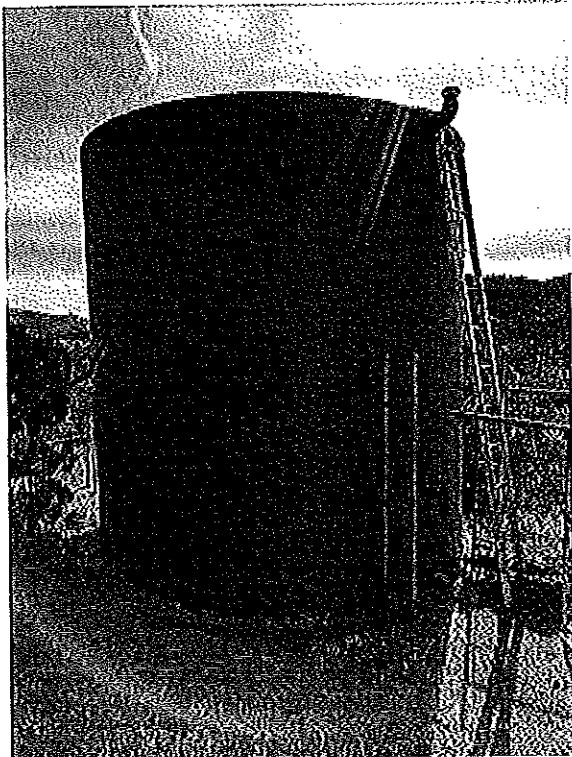
Picture 3

This is Montclair Storage Tank. The outlet and inlet are at the bottom of the tank; therefore, there is insufficient mixing of water in the tank. During the inspection, a fire hose bib was connected to one of the outlets in order to pressurize the new transmission line constructed for the Prop 84 consolidation project. This may be a source of contamination; however, all samples collected from Montclair Tank have been negative for total coliform bacteria. There is no way to access the top of the tank to check the tank's interior and determine its cleanliness.



Picture 4

This is Umtali Well. A wooden building encloses the wellsite. The casing vent is adequately screened. However, there is a big crack in the concrete slab. In addition, there were rodent droppings all around the wellsite. This wellsite may be a source of contamination. The well itself has been negative for total coliform bacteria.



Picture 5

This is Umtali Storage Tank. This tank has two sets of common inlet/outlet arrangements at the bottom. There is insufficient mixing of water in the tank. There is no dedicated sample tap at the tank. Samples are collected using a hose bib attached to one of the tank's inlet/outlet arrangements. Batch chlorination using calcium hypochlorite tablets is provided at this tank. The tank has tested positive twice and negative twice for total coliform bacteria. There is a ladder to access the top of the tank. The vent is appropriately screened and the hatch was locked shut.



Picture 6

These are two new sample stations in the distribution system. The left picture was taken at Country Canyon sample station. The right picture was taken at 24630 Nyamazi Ct sample station. The stations have tested positive for total coliform bacteria after installation.

Enclosure C

Bacteriological Sample Results Summary

Date	Type	Location	Result
9/18/2017	Routine (2-ROU)	Country Canyon and Umtali	P
9/18/2017	Routine (1-ROU)	Upper Hillview PRV	A

9/20/2017	Repeat (2-Rep-1)	Country Canyon and Umtali	P
9/20/2017	Repeat (2-Rep-2)	24630 Nyamazi Ct	P
9/20/2017	Repeat (2-Rep-3)	24630 Country Canyon	P
9/20/2017	GWR	Umtali Well	A
9/20/2017	GWR	Montclair Well	A

10/23/2017	Routine (1-ROU)	Upper Hillview PRV	A
10/23/2017	Routine (2-ROU)	Country Canyon and Umtali	P
10/23/2017	Routine (3-ROU)	24630 Nyamazi Ct	P
10/23/2017	Routine (4-ROU)	Montclair Yard	A
10/23/2017	Routine (5-ROU)	24630 Country Canyon	A
10/23/2017	Investigative	Umtali Well	A
10/23/2017	Investigative	Montclair Well	A

10/25/2017	Investigative	Montclair Tank	A
10/25/2017	Investigative	Umtali Tank	P
10/25/2017	Investigative	Country Canyon and Umtali	P
10/25/2017	Investigative	24630 Nyamazi Ct	P

11/2/2017	Investigative	Umtali Tank	A
11/2/2017	Investigative	Country Canyon and Umtali	P
11/2/2017	Investigative	Country Canyon Booster Station	A
11/2/2017	Investigative	24630 Nyamazi Ct	P
11/2/2017	Investigative	Sand Canyon Blow-off	A

11/9/2017	Investigative	Sand Canyon Blow-off	A
11/9/2017	Investigative	Country Canyon and Umtali	P
11/9/2017	Investigative	24630 Nyamazi Ct	P
11/9/2017	Investigative	Umtali Tank	A
11/9/2017	Investigative	Country Canyon Booster Station	P

11/13/2017	Routine (1-ROU)	Upper Hillview PRV	A
11/14/2017	Routine (2-ROU)	Country Canyon and Umtali	A
11/14/2017	Routine (3-ROU)	24630 Nyamazi Ct	P
11/13/2017	Routine (4-ROU)	Montclair Yard	A
11/14/2017	Routine (5-ROU)	24630 Country Canyon	A
11/13/2017	GWR	Umtali Well	A
11/13/2017	GWR	Montclair Well	A
11/14/2017	Investigative	Umtali Tank	P

11/16/2017	Repeat (3-REP-1)	24630 Nyamazi Ct	P
11/16/2017	Repeat (3-REP-1)	Umtali Tank	A
11/16/2017	Repeat (3-REP-1)	Country Canyon and Umtali	A

11/27/2017	Investigative	Country Canyon and Umtali	P
11/27/2017	Investigative	Country Canyon Booster Station	A
11/27/2017	Investigative	Umtali Tank	A
11/27/2017	Investigative	24630 Nyamazl Ct	P

11/30/2017	Investigative	24630 Nyamazl Ct	P
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Enclosure D

Timeline of Umtali Mainline Breaks & Repairs

From: Randy Hardenbrook
To: [Khurana, Aayush@Waterboards](mailto:Khurana.Aayush@Waterboards)
Cc: Dhaliwal, Jesse@Waterboards; Amtey, Nivedita@Waterboards
Subject: Timeline of damage and repairs on Umtali
Date: Wednesday, November 15, 2017 3:48:13 PM

Umtali Road system damage timeline:

- 7/27 While potholing to locate existing lines prior to start of construction, QVWD staff hit main causing leak that was repaired with a leak clamp without affecting normal system operation.
- 8/14 Contractor hit water main-no leak.
- 8/22 While potholing to locate existing lines prior to trenching for new line, QVWD staff hit lateral affecting 3 services. Lateral was isolated and repaired.
- 8/23 While trenching for new lines, contractor hit service lateral. Lateral was isolated and repaired.
- 8/25 While trenching for new lines, contractor hit lateral from existing main to Umtali reservoir. Umtali reservoir is served by 2 separate laterals. Isolated damaged lateral and repaired.
- 8/25 Contractor hit customer side line after meter. Isolate at meter and repair line.
- 8/25 Contractor hit main between 2 laterals from Umtali reservoir, no valving in place to isolate main. Excavate leak and trench to drain water from excavation. Reduce flow from Umtali reservoir to reduce pressure at leak, cut out damaged section of main and install replacement line with compression couplings to restore service.
- 8/28 Contractor hit service lateral. Isolate and repair.
- 8/30 Noticed indication of main leak (wet earth) at west end of Umtali-monitor.
- 9/1 Shutdown system to tie-in 1st segment of new main. New line disinfected overnight and flushed prior to connection but Bac-T sample not collected due to time constraint (construction activities already uncovering existing main).
- 9/1 While grading road, contractor hit main west of Umtali reservoir requiring shutdown of west end of system for repair.
- 9/3 Noticed indication of leak at Umtali And Country Canyon-monitor.
- 9/6 Isolate west end (Shanganl area) for tie-in of new segment of main.
- 9/7 Shutdown system from Umtali reservoir lateral to east end of system for tie-in of new main section.
- 9/11 Isolate west end (Shanganl area) for installation of valves and tee for permanent repair of 9/1 damage.
- 9/13 Excavate and repair (install bell-clamp) leak noticed on 8/30.
- 9/14 Hot-tap and install 2 replacement services to permanently repair damage from prior activities and lower services below new road.
- 9/15 While grading, contractor hit marked main requiring shutdown of system from Country Canyon to east end for repair.
- 9/20 While installing culvert, contractor hit marked service line. Isolate service line, hot-tap and relocate service and meter.
- 9/23 While excavating existing lines at Country Canyon in preparation for tie-in, line failed at existing valve box and line to north hit by backhoe, requiring shutdown to make temporary repairs.
- 9/27 Shutdown system at Nyamazi to allow tie-in of 4 valves, cross, and new lines under intersection at Umtali and Country Canyon to repair multiple leaks at intersection and lower

- main below new road.
- 9/29 Excavate and repair (install bell-clamp) leak noticed on 9/3 as well as additional leak discovered at next joint.
- 10/3 Shutdown system from Umtali reservoir lateral to Shangani for installation of PRV east of Shangani (Prop 84 project).
- 10/5 Shutdown system from new inline valve west of Nyamazi to east end for installation of PRV at Nyamazi (Prop 84 project).

Randy Hardenbrook

General Manager

Quail Valley Water District

24750 Sand Canyon Road

Tehachapi, CA 93561

Office: (661) 822-1923

Cell: (661) 332-1547

11/30/17 Disassemble Nyamazi sample station and related fittings, rinse all components with 12.5% sodium hypochlorite. Reassemble sample station and fittings, fill with sodium hypochlorite and allow to soak for 30 minutes. Install and flush sample station. Collect sample. Sample reported as present for total coliform.

12/4/17 During flushing activities, discovered restricted flow at Nyamazi PRV. Dose Umtali reservoir.

12/5/17 Remove bonnet from Nyamazi PRV, found PRV filled with gravel. Remove gravel and flush PRV. Dose Umtali reservoir.

12/6/17 Country Canyon sample station 0ppm residual. Nyamazi sample station 0.5ppm residual. Umtali reservoir 1ppm residual. Dose reservoir. County contractor exposed and severed new water main, main repaired.

12/7/17 Nyamazi sample station 1ppm.

12/8/17 Collect samples from Nyamazi and Country Canyon sample stations. Country Canyon sample reported as present for total coliform.

12/9/17 Dose Umtali reservoir.

12/10/17 Dose Umtali reservoir. Country Canyon sample station 0.6ppm.

12/11/17 Nyamazi sample station 0ppm. Country Canyon sample station <0.6ppm.

12/12/17 Nyamazi sample station 0ppm. Country Canyon sample station 1ppm. Collect samples. Nyamazi reported as present for total coliform.

12/14/17 Dose Umtali reservoir.

12/15/17 Umtali reservoir 0.6ppm. Dose Umtali reservoir. Dose Montclair reservoir to 4ppm. Check Umtali reservoir residual-2ppm. Dose reservoir. Country Canyon sample station 0ppm. Nyamazi sample station 0ppm.

12/16/17 Check Umtali reservoir residual-2ppm. Dose reservoir. Country Canyon sample station 0ppm. Nyamazi sample station 0ppm.

12/17/17 Check Umtali reservoir residual-2ppm. Dose reservoir. Country Canyon sample station 0ppm. Nyamazi sample station 2ppm.

12/18/17 Check residual at Country Canyon sample station-0ppm. Left sample station open to flush. Check residual at Nyamazi sample station-2ppm. Check residual at Umtali reservoir-3ppm. Add 2oz calcium hypochlorite granules. Return to Country Canyon sample station-2ppm.

12/19/17 Check residual at Country Canyon sample station (4ppm). Check residual at Nyamazl sample station (3ppm). Check residual at Umtali reservoir (3ppm), add 2oz granules and 2oz tablets. Flush at Country Canyon north blow-off (low demand dead-end) to pull chlorine into line until residual (2ppm) present. Check residual at Country Canyon booster (2ppm).

**APPENDIX 4. Response to Level 2 Assessment-Letter dated Jan. 24,
2018**



A STATE OF
CALIFORNIA
PUBLIC AGENCY

QUAIL VALLEY WATER DISTRICT

BOARD OF DIRECTORS

Jim Boatman
Matt Daggett
Rita Leonard
Enrique Lopez
Dick Sims

January 24, 2018

Jaswinder S. Dhaliwal, PE
Senior Sanitary Engineer
State Water Resources Control Board
Division of Drinking Water
4925 Commerce Drive, Suite 120
Bakersfield, CA 93309



Dear Mr. Dhaliwal:

Thank you for your letter of December 27, 2017 regarding the Level 2 Assessment of Quail Valley Water District-Westside System (1503226), your suggestions regarding steps that Quail Valley Water District should consider for preventing future bacteriological contamination in the distribution are greatly appreciated.

Quail Valley Water District continues to believe that the current bacteriological contamination issue is absolutely related to the water lines damaged during the recent road construction on Umtali Road and the resulting contamination of the distribution system. While the system has been disinfected numerous times, the bacteriological issue continues to return. Unfortunately, the design of the water system does not allow flushing at sufficient velocities to remove all the debris that entered the system from the broken water lines and it is our opinion that this debris is harboring the bacteria and preventing effective disinfection.

In addition, flushing and disinfection was undertaken in October of 2017, however, damage to lines continued and with each subsequent event that depressurized the system, the final event occurring on December 6, 2017, flushing and disinfection activities needed to begin again.

Since the last water line break on December 6, 2017, our flushing and disinfection efforts have not been successful at completely resolving the bacteriological contamination issue as evidenced by some samples indicating present for Total Coliform. Samples taken after disinfection and shortly after chlorine residual is eliminated are typically absent for Total Coliform, but samples taken several days later are present. Again, this indicates that disinfectant is not reaching bacteria that remains in/under debris remaining in the distribution system.

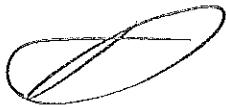
In response to this continued bacteriological contamination issue, Quail Valley Water District has purchased equipment to provide continuous well-head chlorine injection. We anticipate beginning installation of this equipment at the Umtali well and the Montclair well as soon as it arrives and expect to complete the installation and commissioning prior to the end of February.

In response to the 5 specific items identified in your letter that should be addressed, Quail Valley Water District offers the following response:

1. A cross-connection survey was distributed to all customers in March of 2016 and a follow-up letter was sent in April of 2016. The response was less than enthusiastic, and our Cross-Connection Control Program Specialist is following up with physical surveys of those customers that did not respond. Once complete we will address the identified potential and actual cross-connections. Quail Valley Water District will provide you with an update on our progress by March 27, 2018.
2. The Umtali well enclosure is cleaned periodically, and Quail Valley Water District will insure this practice continues. It is impractical to completely prevent the entrance of rodents to this (and most any other) structure and we hesitate to aggressively utilize bait-type extermination efforts as these products may contaminate the water source. In addition, this well and structure are anticipated to soon be placed in stand-by service, negating any contamination from rodents and bacteriological testing has not detected any prior contamination.
3. Visual inspection of the Umtali reservoir does not indicate any excessive buildup of sand, silt or other foreign debris on the tank bottom and very little bio-film on the tank walls. Quail Valley Water District does not intend to subject our rate payers to the expense of cleaning the Umtali reservoir when sample results do not indicate a bacteriological contamination issue and this reservoir will be removed from the system once the current Arsenic remediation project is complete.
4. The Montclair does not have an access ladder installed and at 23 feet high, it is not practical to utilize a portable ladder to access the inspection hatch, so a visual inspection will not be undertaken at this time. In addition, Quail Valley Water District does not intend to subject our rate payers to the expense of cleaning the Montclair reservoir when sample results do not indicate a bacteriological contamination issue and this reservoir will be removed from the system once the current Arsenic remediation project is complete.
5. Quail Valley Water District concurs with the recommendation to install continuous chlorination treatment and maintain a detectible chlorine residual for the entire Westside System.

Thank you for the time and effort that WaterBoards has invested in assisting us with this important issue and Quail Valley Water District welcomes any further suggestions.

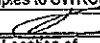
Sincerely,



Randy Hardenbrook
General Manager
Quail Valley Water District

**APPENDIX 5. Bacteriological Sample Siting Plan dated June 15, 2016,
along with Maps of the Water System**

BACTERIOLOGICAL SAMPLE SITING PLAN

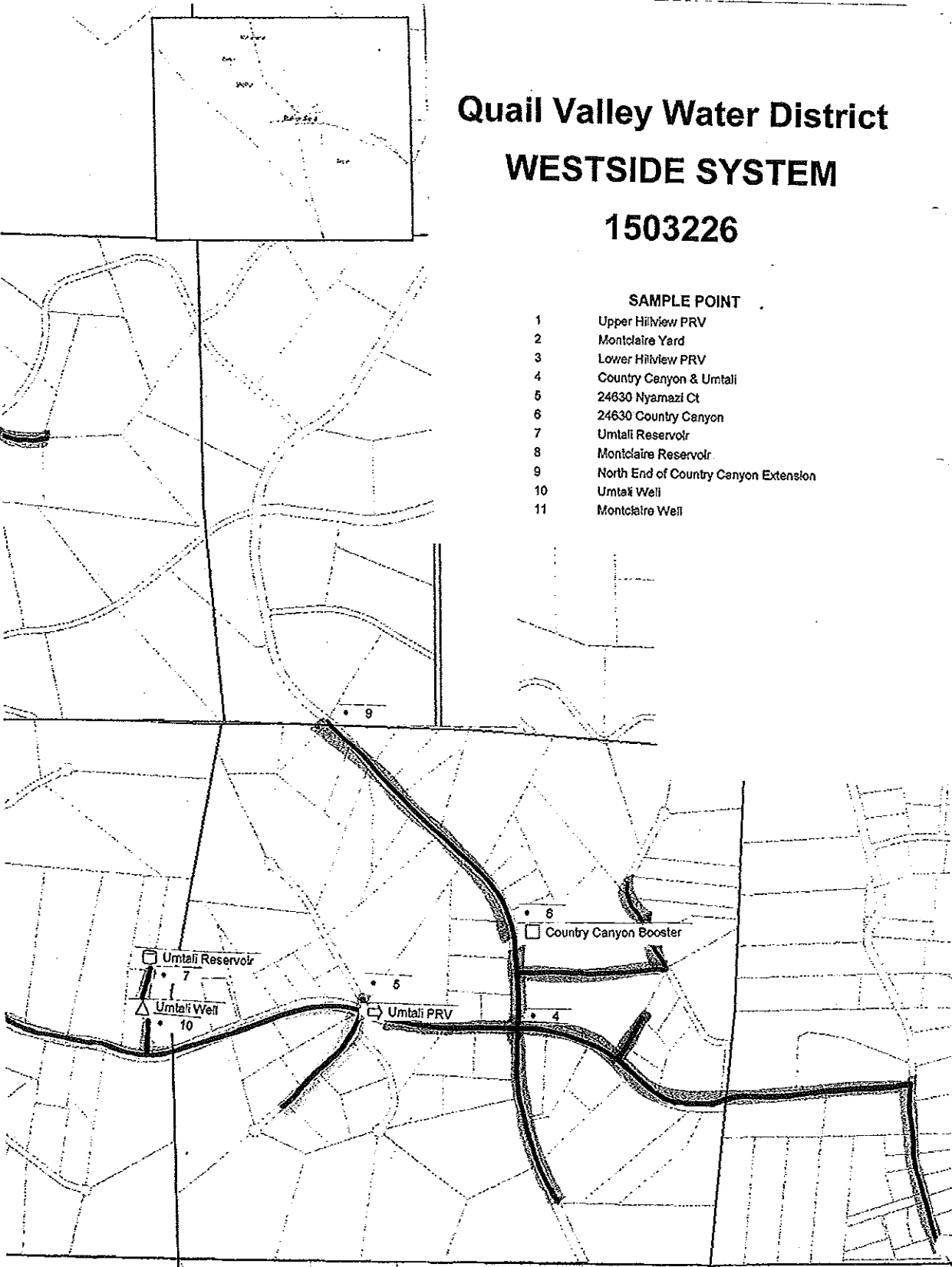
System No.: 1503226		System Name: Quail Valley Water District-Westside System				
PWS Classification: Community		No. Monthly Users: 135		Daily Users: 135		
No. Active Service Connections: 42		Sampling Frequency: 2-Month				
Name of Trained Sampler: Randy Hardenbrook				Analyzing Lab: 8.C. Labs		
Person responsible to report coliform-positive samples to SWRCB: Randy Hardenbrook				Day/Evening Phone No.: (661) 332-1547		
Signature of Water System Representative: 				Date: 6/15/16		
Sample ID	Sample Type	Sample Point	Location of Sample Point	Map Key	Address of Sample Point	Months Sample Collection at this Location
1-ROU	Routine	HB	PZ	1	Upper Hillview PRV	Each Month -Routine
1-REP1	Repeat	HB	RD	1	Upper Hillview PRV	Repeat Sample Only
1-REP2	Repeat	HB	RD	2	Montclair's Yard	Repeat Sample Only
1-REP3	Repeat	HB	RD	3	Lower Hillview PRV	Repeat Sample Only
1-REP4	Repeat & GWR	PC	RD	11	Montclair's Well	Repeat & GWR Sample
2-ROU	Routine	HB	PZ	4	Country Canyon & Umtali	Each Month -Routine
2-REP1	Repeat	HB	RD	4	Country Canyon & Umtali	Repeat Sample Only
2-REP2	Repeat	HB	RD	5	24630 Nyamazi Ct	Repeat Sample Only
2-REP3	Repeat	HB	RD	6	24630 Country Canyon	Repeat Sample Only
2-REP4	Repeat & GWR	HB	RD	10	Umtali Well	Repeat & GWR Sample
3-ROU	Routine	HB	RD	5	24630 Nyamazi Ct	Routine (month following a positive)
3-REP1	Repeat	HB	RD	5	24630 Nyamazi Ct	Repeat Sample Only
3-REP2	Repeat	HB	RD	7	Umtali Reservoir	Repeat Sample Only
3-REP3	Repeat	HB	RD	4	Country Canyon & Umtali	Repeat Sample Only
3-REP4	Repeat & GWR	HB	RD	10	Umtali Well	Repeat & GWR Sample
4-ROU	Routine	HB	RD	2	Montclair's Yard	Routine (month following a positive)
4-REP1	Repeat	HB	RD	2	Montclair's Yard	Repeat Sample Only
4-REP2	Repeat	HB	RD	8	Montclair's Reservoir	Repeat Sample Only
4-REP3	Repeat	HB	RD	1	Upper Hillview PRV	Repeat Sample Only
4-REP4	Repeat & GWR	PC	RD	11	Montclair's Well	Repeat & GWR Sample
5-ROU	Routine	HB	RD	6	24630 Country Canyon	Routine (month following a positive)
5-REP1	Repeat	HB	RD	6	24630 Country Canyon	Repeat Sample Only
5-REP2	Repeat	HB	RD	4	Country Canyon & Umtali	Repeat Sample Only
5-REP3	Repeat	HB	RD	9	North End of Country Canyon Extension	Repeat Sample Only
5-REP4	Repeat & GWR	HB	RD	10	Umtali Well	Repeat & GWR Sample

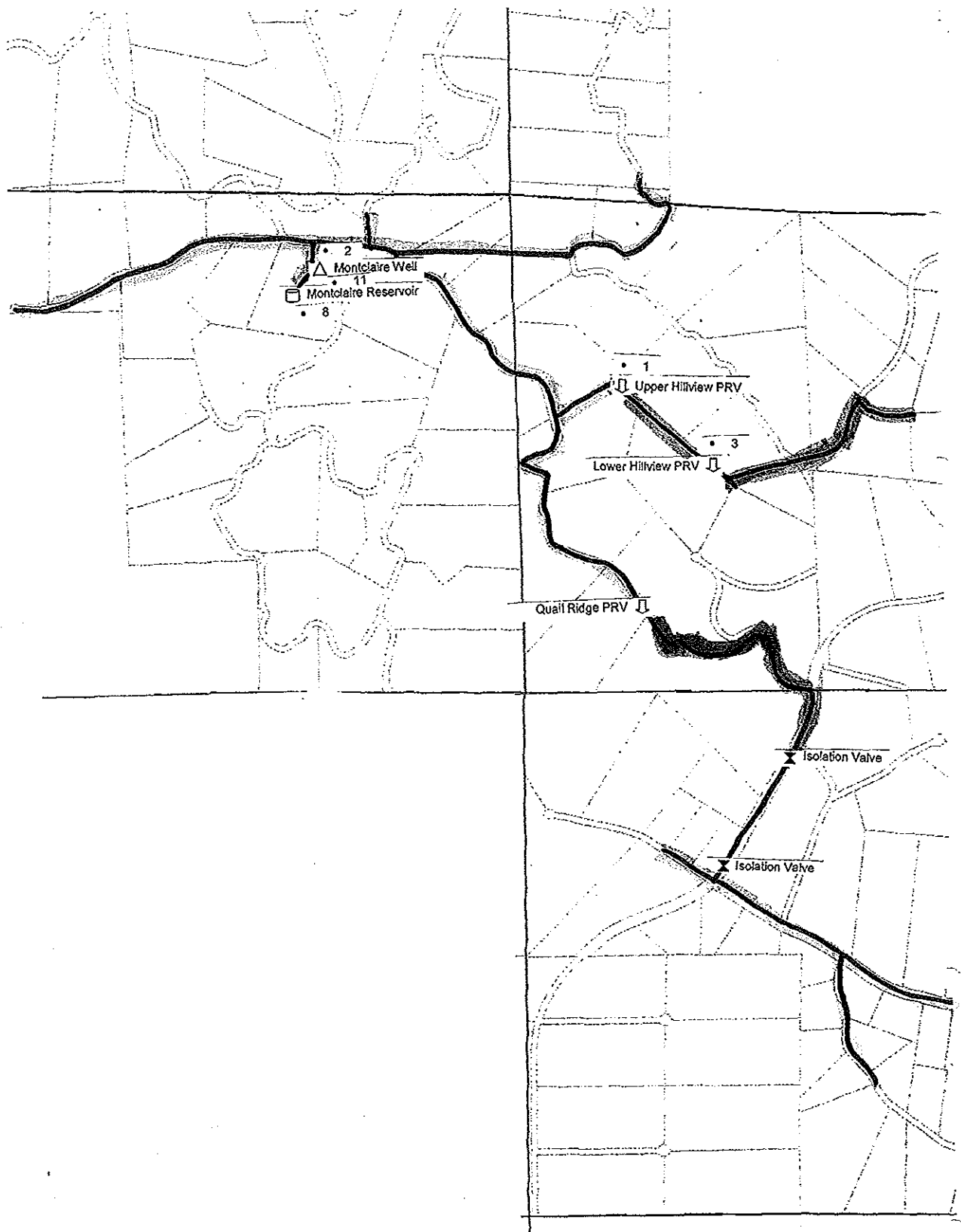
Quail Valley Water District WESTSIDE SYSTEM

1503226

SAMPLE POINT

- 1 Upper Hillview PRV
- 2 Montclair Yard
- 3 Lower Hillview PRV
- 4 Country Canyon & Umtali
- 5 24630 Nyamazi Ct
- 6 24630 Country Canyon
- 7 Umtali Reservoir
- 8 Montclair Reservoir
- 9 North End of Country Canyon Extension
- 10 Umtali Well
- 11 Montclair Well



























SCALE 10 = 100%

1000 - 1000



IN AN EFFORT TO BRING ABOUT A MORE EFFECTIVE AND ECONOMICALLY SOUND approach to the design and construction of buildings, the American Institute of Architects has developed a new system of design and construction contracts. This new system is based on the premise that the architect should be paid a fixed fee for his services, and that the contractor should be paid a fixed price for the work. The new system is designed to provide a more predictable and efficient way of doing business between architects and contractors.

LEGEND:

	MAIN ZONE
	WATER
	ROAD
	BOUNDARY
	WATER
	WATER
	WATER
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	WATER

LEGEND:

PROPOSED SYSTEM OVERVIEW

REVE ENVIRONMENTAL INC.
16750 MATTHEW CIRCLE, PUEBLO, CA 95020
PHONE (951) 783 0512 FAX (916) 542 8502
HARRIS-REVE ENVIRONMENTAL INC.
CIVIL AND ENVIRONMENTAL ENGINEERS
P.O. BOX 10000
PUEBLO, CA 95020



**APPENDIX 6. Timeline of the Actions Taken by the Water System,
Starting from December 19, 2017**

Khurana, Aayush@Waterboards

From: Randy Hardenbrook <randy@qvwd.org>
Sent: Thursday, January 25, 2018 4:43 PM
To: Khurana, Aayush@Waterboards
Subject: Timeline 12/19/17-1/23/18
Attachments: 12-19-17 through 1-23-18 disinfection activities.docx

Randy Hardenbrook
General Manager
Quail Valley Water District
24750 Sand Canyon Road
Tehachapi, CA 93561
Office: (661) 822-1923
Cell: (661) 332-1547

- 12/19/17 Travel to Country Canyon sample station, check residual (3ppm @ 11:43). Travel to Nyamazi sample station (3ppm @ 11:47). Travel to Umtali reservoir, check residual (3ppm @ 11:50). Add 2oz granules and 2oz tablets. Travel to Country Canyon north blow-off and flush line. Check residual at Country Canyon booster (0ppm). Travel to Country Canyon blow-off, check residual (2ppm @ 13:40). Close blow-off and remove temporary stand-pipe. Check residual at Country Canyon booster (3ppm). Check Umtali reservoir, pump running, filling tank. Add 4oz granules & 2oz tablets.
- 12/20/17 Check residual at Nyamazi sample station (0ppm). Check residual at Country Canyon sample station (3ppm). Check chlorine residual at Nyamazi sample station (trace).
- 12/21/17 Travel to Montclair well (48.5', pump not running, 0990996, 3192.9 @ 13:46), Check residual at yard hydrant (none). Collect sample from yard hydrant. Travel to Upper Hillview sample station, check residual (none), collect sample. Return to Country Canyon booster and check residual (0ppm @ 14:21), collect sample. Continue monitoring residuals at Nyamazi, Country Canyon & Umtali reservoir while continuing to flush. Travel to Umtali reservoir, check residual (0ppm @ 15:45), collect sample. Check residual at Nyamazi (1ppm). Travel to Nyamazi sample station, check residual (trace). Travel to Country Canyon booster, check residual (0ppm), collect sample. Return to Nyamazi sample station, check residual (0ppm), collect sample. Travel to Umtali well, place in auto. Complete COC and store samples on ice in insulated box.
- 12/22/17 Travel to BC Labs to deliver samples. Lab not accepting Bac-Ts due to holiday schedule. Travel to Umtali reservoir, add 4oz granules, 2 oz tablets.
- 12/23/17 Travel to Country Canyon booster, check residual (none). Travel to Umtali reservoir, check residual (0.6). Add 6oz granules.
- 12/25/17 Travel to Office for sample supplies. Travel to Country Canyon booster, flush sample port. Travel to Country Canyon sample station, flush. Travel to Nyamazi sample station, flush. Return to Country Canyon booster, check residual (0ppm), collect sample, close sample tap. Return to Country Canyon sample station, check residual (0ppm), collect sample, close and evacuate sample station. Travel to Nyamazi sample station, check residual (1ppm), continue flushing. Travel to Montclair well (20.5', 0993993, 3202.4 @ 13:17), flush yard hydrant, check residual (0ppm),

collect sample. Travel to Upper Hillview PRV, flush sample tap, check residual (0ppm), collect sample. Return to Nyamazi sample station, check residual (0ppm), collect sample, close and evacuate sample station. Return to Office, refrigerate samples and gather sample supplies for Tuesday.

- 12/27/17 Travel to Umtali reservoir, add 4oz granules and 3oz tablets.
- 12/28/17 Travel to Umtali reservoir, check residual (0.5ppm). Add 5oz granules, start pump. Travel to Umtali reservoir, check residual (2ppm). Add 2oz granules, start pump.
- 12/29/17 Travel to Umtali reservoir, check residual (2ppm). Add 3oz granules. Travel to Nyamazi sample station, check residual (2ppm). Travel to Country Canyon sample station, check residual (2ppm). Travel to Country Canyon booster, check residual (1ppm).
- 12/30/17 Travel to Umtali reservoir, check residual (2ppm @ 13:25). Add 4oz granules, start pump. Travel to Nyamazi sample station, check residual (2ppm @ 13:32). Travel to Country Canyon sample station, check residual (0ppm @ 13:40). Travel to Sand Canyon blow-off, open valve to flush line (13:45). Return to Sand Canyon blow-off, close valve. Return to Country Canyon blow-off, check residual (1ppm).
- 12/31/17 Travel to Umtali reservoir, check residual (2ppm @ 9:16). Add 4oz granules, start pump. Travel to Shangani PRV, flush end of Montclair line (10:36). PRV 100# in, 46# out. Return to Shangani PRV, close valve from Montclair at PRV. Travel to lower Quail Ridge PRV, check operation (115# in, 42# out). Travel to Country Canyon blow-off, open valve to flush line. Travel to Country Canyon booster, check residual (0.5ppm @ 11:35). Check residual at Country Canyon sample station (1ppm @ 11:45). Return to Umtali reservoir, check residual (2ppm @ 11:54). Add 4oz granules. Return to Shangani PRV, open valve from Umtali line and flush. Check residual (3ppm @ 12:29). Close valve to PRV. Return to Country Canyon blow-off, close valve. Return to Country Canyon blow-off, check residual (1ppm @ 15:15), open valve to flush. Return to Country Canyon booster, check residual (1ppm @ 15:33). Return to Country Canyon blow-off, check residual (0ppm @ 16:11). Return to Country Canyon booster, check residual (2ppm @ 16:15). Travel to Nyamazi sample station, check residual (2ppm @ 16:27).

- 1/1/18 Travel to Country Canyon sample station, check residual (0ppm). Travel to Country Canyon booster, check residual (1ppm). Travel to Nyamazi sample station, check residual (2ppm).
- 1/2/18 Travel to Country Canyon sample station, check residual (2ppm). Travel to Nyamazi sample station, check residual (2ppm). Travel to Nyamazi sample station, check residual (0ppm). Check Nyamazi PRV (90# in, 64# out). Travel to Country Canyon booster, check residual (2ppm).
- 1/3/18 Travel to Country Canyon blow-off, open valve to flush (8:10). Travel to Country Canyon sample station, check residual (0ppm @ 8:16). Travel to Nyamazi sample station, check residual (0.5ppm @ 8:24). Travel to Umtali reservoir, check residual (1ppm @ 8:30). Return to Country Canyon blow-off, close valve. Travel to Country Canyon booster, check residual (0ppm @ 17:12), collect sample. Travel to Country Canyon sample station, check residual (0ppm @ 17:17), collect sample. Travel to Upper Hillview PRV (17:30), collect sample. Travel to Montclair well (48.5', 1006277, 3241.0 @ 17:37), collect sample. Travel to Nyamazi sample station, check residual (0ppm @ 17:53), collect sample.
- 1/5/18 Travel to Sand Canyon blow-off, open valve to flush. Travel to Country Canyon blow-off, open valve to flush. Travel to Umtali reservoir, start pump, add 8oz granules @ 16:45. Travel to Nyamazi PRV (85/60), open bypass valve to flush (80/65 @ 16:50). Open Nyamazi sample station to flush, check residual (0.6ppm @ 17:30). Close Nyamazi bypass valve (85/60). Return to Country Canyon blow-off, close valve. Return to Sand Canyon blow-off, close valve.
- 1/6/18 Travel to Umtali reservoir, check residual (1ppm @ 10:40). Add 6oz granules. Travel to Shangani PRV, open low-side valve, note system pressure (50#). Travel to Sand Canyon blow-off, open valve to flush. Travel to north Country Canyon blow-off, open valve to flush. Travel to south Country Canyon blow-off, open valve to flush. Return to Shangani PRV, open high-side valve, adjust pressure to 125/40. Open bypass slightly to flush dead end. Travel to Nyamazi PRV (70/57, slight cavitation heard). Flush Nyamazi sample station, check residual (2ppm @ 11:35). Return to Shangani PRV (120/40 @ 11:46). Travel to Umtali well, add 1/2 cup sodium hypochlorite to well, flush casing. Travel to Umtali reservoir, check residual (4ppm, 2/3 full @ 12:39). Return to Nyamazi PRV, check residual (0.4ppm @ 13:09). Return to north Country Canyon blow-off, check residual (1ppm @ 14:26), close valve. Return to south Country Canyon blow-off, check residual (0.6ppm @ 14:35), close valve. Return to

- Sand Canyon blow-off, close valve. Travel to Umtali reservoir, check residual (0.6ppm). Add 12oz granules, start pump.
- 1/7/18 Travel to Umtali reservoir, check residual (2ppm @ 17:20). Add 6oz granules.
- 1/8/18 Travel to Sand Canyon blow-off, open valve to flush. Travel to Country Canyon south blow-off, open valve to flush. Travel to Country Canyon north blow-off, open valve to flush. Travel to Umtali well, place pump in hand. Travel to Sand Canyon blow-off, close valve. Travel to Country Canyon south blow-off, close valve. Travel to Country Canyon north blow-off, close valve. Travel to Umtali well, place pump in auto. Travel to Shangani PRV, check operation (122/51). Travel to Nyamazi PRV, check operation-found valve stuck (95/95). Close high-side valve, bleed pressure, open valve (90/67-OK).
- 1/9/18 Participate in conference call with WaterBoards to discuss Umtali disinfection. Travel to Country Canyon sample station, open valve to flush. Travel to Nyamazi sample station, open valve to flush. Open PRV vault, open sample station to flush, noticed pressure drop-suspect PRV plugged with debris. Close all sample stations and return to Office for truck. Return to site with Dan, disassemble PRV. Found PRV filled with coarse sand. Flush PRV. Pump out water from vault, reassemble PRV and restore to service. Travel to Shangani PRV, check operation (120/50 @ 13:17). Return to Nyamazi PRV, check operation (92/65 @ 13:45). Secure site and return to Office. Upload pictures and email Aayush (WaterBoards).
- 1/10/18 Travel to Sand Canyon blow-off, open valve to flush. Travel to Country Canyon sample station, open valve to flush. Travel to Nyamazi sample station, open valve to flush. Travel to Umtali well, cycle power to start pump. Return to Country Canyon sample station, collect sample. Travel to Nyamazi sample station, collect sample. Open PRV vault and collect sample. Return to Umtali well, collect sample. Travel to south Country Canyon blow-off, open valve to flush. Travel to north Country Canyon blow-off, open valve to flush. Return to Office, prepare and ship samples. Travel to Shangani PRV, check status (118/52). Travel to Nyamazi PRV, check status (95/65).
- 11/11/18 Travel to Sand Canyon blow-off, open valve to flush. Travel to south Country Canyon blow-off, open valve to flush. Travel to north Country Canyon blow-off, open valve to flush. Travel to Nyamazi PRV, check operation-pressure near equal on both sides. Open by-pass to flush.

Travel to Umtali reservoir, add 8oz granules. Return to Nyamazi PRV, re-check operation. Return to south Country Canyon blow-off, close valve. Return to north Country Canyon blow-off, close valve. Return to Sand Canyon blow-off, close valve. Travel to Shangani PRV, check status (150/51). Travel to Nyamazi PRV, check status (92/65).

1/12/18 Travel to Umtali well, add 8oz granules, start pump.

1/13/18 Travel to Sand Canyon blow-off, open valve to flush. Travel to south Country Canyon blow-off, open valve to flush. Travel to north Country Canyon blow-off, open valve to flush. Travel to Umtali reservoir, add 8oz granules, 1/4 cup sodium hypochlorite and 2oz tablets, start pump. Travel to Shangani PRV, open bypass to flush, close bypass (124/41 @ 12:15). Travel to Nyamazi PRV, open bypass to flush, close bypass (70/62 @ 12:25). Fully open Nyamazi PRV to flush. Travel to B/8525, exercise valve multiple cycles (38.5 turns). Travel to 1/8414, exercise valve multiple cycles (38.5 turns). Return to Nyamazi PRV (70/70). Travel to Nyamazi PRV, return to normal operation (70/62 @ 13:45). Travel to north Country Canyon blow-off, check residual (1ppm), close valve. Travel to south Country Canyon blow-off, check residual (1ppm), close valve. Travel to Sand Canyon blow-off, check residual (1ppm), close valve.

1/14/18 Travel to Nyamazi sample station, check residual (1ppm @ 10:54). Travel to Country Canyon sample station, check residual (0ppm @ 10:57). Travel to Sand Canyon blow-off, open valve to flush, check residual (1ppm @ 11:01). Travel to south Country Canyon blow-off, open valve to flush, check residual (1ppm @ 11:05). Travel to north Country Canyon blow-off, open valve to flush, check residual (0.5ppm @ 11:11). Travel to Umtali reservoir, check residual (1ppm @ 11:28, add 12oz granules, 1/4 cup sodium hypo). Travel to Shangani PRV, open PRV fully to flush. Return PRV to normal operation (115/40 @ 11:46). Travel to Nyamazi PRV, open fully to flush, leave open. Check residual at Nyamazi sample station (1ppm @ 11:52). Travel to Umtali and Country Canyon, dig out filled, crooked valve cans, exercise valves to stimulate flow and assist flushing. Reset valve cans and partially backfill. Return to north Country Canyon blow-off, check residual (1ppm @ 13:10), close valve. Return to south Country Canyon blow-off, check residual (2ppm @ 13:18), close valve. Travel to Country Canyon sample station, check residual (2ppm @ 13:29). Return to Nyamazi PRV, restore normal operation (90/62), check residual at Nyamazi sample station (2ppm @ 13:35). Return to Sand Canyon blow-off, check residual (1ppm @ 13:45), close valve-valve obstructed. Cycle valve several times, noticed some color from discharge, valve cleared.

- 1/15/18 Travel to Country Canyon sample station, check residual (0ppm @ 10:15), leave open to flush. Travel to Nyamazi sample station, check residual (1ppm @ 10:17), leave open to flush. Return to Country Canyon sample station, check residual (0ppm @ 10:20). Travel to Sand Canyon blow-off, open valve to flush, check residual (1ppm @ 10:24). Travel to Nyamazi PRV, open PRV fully. Travel to Umtali reservoir, check residual (1ppm @ 10:35). Return to Country Canyon sample station, check residual (1ppm @ 10:40). Exercise valve at Country Canyon and Umtali to stimulate flow to assist flushing any accumulated debris downstream. Travel to Country Canyon booster, open valve to flush, check residual (1ppm @ 11:12). Travel to Country Canyon sample station, check residual (0ppm @ 12:44), collect sample. Travel to Country Canyon booster, check residual (1ppm @ 12:50), leave open to flush. Travel to Nyamazi sample station, check residual (0ppm @ 12:56), collect sample, return PRV to normal operation. Travel to Sand Canyon blow-off, check residual (0ppm @ 13:08), collect sample, close valve. Return to Country Canyon booster, check residual (0ppm @ 13:14), collect sample, close sample tap. Return samples to Office, package and ship samples.
- 1/18/18 Open Nyamazi and Country Canyon sample stations to flush. Open Sand Canyon blow-off to flush. Travel to Sand Canyon blow-off, close valve. Travel to Country Canyon booster, open sample tap to flush. Travel to Montclair well, collect sample (4-ROU @ 11:36). Travel to Upper Hillview PRV, flush sample tap & collect sample (1-ROU @ 11:44). Travel to Nyamazi sample station, collect sample (3-ROU @ 11:55). Travel to Country Canyon sample station, collect sample (2-ROU @ 11:58). Travel to Country Canyon booster, collect sample (5-ROU @ 12:01). Return to Office, prep & ship samples. Travel to Umtali reservoir, tank near full, add 5oz granules, start pump. Travel to Country Canyon sample station, evacuate. Travel to Nyamazi sample station, evacuate. Check Nyamazi PRV (95/62).
- 1/20/18 Travel to Umtali reservoir, check residual (0ppm @ 16:05), add 8oz granules, start pump.
- 1/22/18 Travel to Sand Canyon blow-off, open valve to flush (10:15). Travel to Country Canyon sample station, check residual (1ppm), flush. Travel to Country Canyon booster, open valve, flush. Travel to Nyamazi sample station, check residual (0ppm @ 10:37), flush. Travel to Umtali reservoir, check level (8.3' @ 10:43), start pump. Travel to Upper Hillview PRV, collect sample (10:55). Travel to Montclair well, check status (pump not running, 43.9', 1021548, 3289.1 @ 11:02), check residual (0ppm), collect

sample from well house hose bibb. Travel to Montclair reservoir, check residual (0ppm @ 11:10), collect sample. Return to Nyamazi sample station, check residual (0ppm @ 11:22). Return to Country Canyon sample station, check residual (0ppm @ 11:28), collect sample. Return to Country Canyon booster, close valve. Return to Sand Canyon blow-off, close valve.